

Current Clinical Strategies

Medicine

1997 Edition

Paul D. Chan, M.D.

Michael Safani, Pharm. D.
Assistant Clinical Professor
School of Pharmacy
University of California, San Francisco

Peter J. Winkle, M.D.

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Cardiology

Myocardial Infarction and Unstable Angina

1. **Admit to:** Monitored bed (CCU/MICU)
2. **Diagnosis:** Rule out MI
3. **Condition:**
4. **Vital signs:** q1h, then q6h. Call physician if pulse >90,<60; BP >150/90, <90/60; R>25, <12; T >38.5°C.
5. **Activity:** Bed rest with bedside commode.
7. **Nursing:** Guaiac stools. If patient has chest pain, obtain 12-lead ECG and call physician.
8. **Diet:** Cardiac diet, 1-2 gm sodium, low fat, low cholesterol diet. No caffeine or temperature extremes.
9. **IV Fluids:** D5W at TKO
10. **Special Medications:**
 - Oxygen 2-4 L/min by NC.
 - Aspirin 80 or 325 mg PO chew and swallow, then aspirin E.C. (Ecotrin)160 or 325 mg PO qd **OR**
 - Ticlopidine 250 mg bid (aspirin sensitive patient) **AND**
 - Heparin 5000-10,000 U bolus followed by heparin at 15 U/kg/h and adjust to PTT 1.5-2.0 x control.
 - Nitroglycerine Drip 15 mcg IV bolus, then 10 mcg/min infusion (50 mg in 250-500 mL D5W, 100-200 mcg/mL). Titrate in 5-10 mcg/min steps, up to 200-300 mcg/min; maintain systolic BP >90; titrate to control symptoms; keep heart rate <20% of baseline rate **OR**
 - Nitroglycerine SL, 0.4 mg (0.15-0.6 mg) SL q5min until pain free (up to 3 tabs)

Thrombolytic Therapy in Myocardial Infarction:

Relative Contraindications to Thrombolytics: Absence of ST-segment elevation, severe hypertension, cerebrovascular disease, relatively recent surgery (>2 wk), cardiopulmonary resuscitation.

Absolute Contraindications to Thrombolytics: Active internal bleeding, history of hemorrhagic stroke, head trauma, pregnancy, surgery within 2 wk, recent non-compressible vascular puncture.

A. Streptokinase or Anistreplase (APSAC):

1. Aspirin 325 mg chew and swallow now and qd **AND**
Heparin 5000 U IV bolus **AND**
Diphenhydramine 50 mg IV push **AND**
Methylprednisolone 250 mg IV push.
2. Streptokinase - 1.5 million IU of streptokinase in 100 mL NS IV over 60 min **OR**
Anistreplase (APSAC, Eminase), 30 units IV over 2-5min.
3. Heparin 10 U/kg/h IV after administration of streptokinase or anistreplase and maintain PTT 1.5-2 times control.
4. PTT, fibrinogen now **AND** q6h x 4h.
5. No IM or arterial punctures, watch IV for bleeding.

OR

B. Recombinant tissue plasminogen activator (tPA):

1. Aspirin, 325 mg chew and swallow now & qd. Heparin 5000 U IV bolus.
2. tPA 15 mg IVP over 2 min, followed by 0.75 mg/kg (max 50 mg) IV infusion over 30 min, followed by 0.5 mg/kg (max 35 mg) IV infusion over 60 min (total dose < 100 mg).
3. Start heparin 15 U/kg/h infusion after tPA, & adjust to PTT of 1.5-2 times control.

4. PTT & fibrinogen now & q6h x 24h. No IM or arterial punctures, watch IV for bleeding.
5. **Labs:** INR/PTT, thrombin time, FDP, fibrinogen, reptilase time, bleed time, type & screen.

Beta-Blockers: Contraindicated in presence of CHF.

- Metoprolol (Lopressor) 5 mg IV q2-5min x 3 doses; then 25 mg PO q6h x 48h, then 100 mg PO q12h; may give 2 mg IV q2h prn pulse > 70, hold if systolic BP <90 **OR**
- Esmolol hydrochloride (Brevibloc) 500 mcg/kg IV over 1 min, then 50 mcg/kg/min IV infusion, titrated to heart rate >60 (max 300 mcg/kg/min) **OR**
- Propranolol 0.1 mg/kg IV divided in 3 doses q5min; followed in 1h by 20-40 mg PO q6-8h (160-240 mg/d); propranolol-LA (Inderal-LA), 80-120 mg PO qd [60, 80, 120, 160 mg] **OR**
- Atenolol (Tenormin) 5-10 mg IV, then 50-100 mg PO qd, titrate to HR >60 (max 200 mg/d).

Other Medications

- Heparin 5000 U (100 U/kg) IV bolus followed by 1000 U/hr (15 U/kg); adjust to PTT 2-2.5 times control **OR** 5000 units SQ q8-12h.
- Isosorbide dinitrate (Isordil) 10-60 mg PO tid [5,10,20, 30,40 mg]; Sustained release, 40-80 mg PO q8-12h [40 mg]

11. Symptomatic Medications:

- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
- Lorazepam (Ativan) 1-2 mg PO tid or qid prn anxiety **OR**
- Zolpidem (Ambien) 5-10 mg qhs, use 5 mg for elderly **OR**
- Diphenhydramine (Benadryl) 25-50 mg PO qhs prn sleep.
- Docusate (Colace) 100-250 mg PO bid.
- Dimenhydrinate (Dramamine) 25-50 mg IV over 2-5 min q4-6h or 50 mg PO q4-6h prn nausea.
- Ranitidine (Zantac) 150 mg PO bid or 50 mg IV q8h.

-Mylanta 30 mL PO qid prn heartburn.

12. Extras: ECG stat and in 12h and in AM. Repeat if chest pain; portable CXR, echocardiogram or radionuclide ventriculogram. Cardiology consult.

13. Labs: SMA7 & 12, magnesium. Cardiac enzymes: CPK, CPK-MB, STAT & q6h x 24h. LDH & isoenzymes. CBC; fasting cholesterol, HDL, triglyceride. INR/PTT, UA.

14. Other Orders and Meds:

Congestive Heart Failure

- 1. Admit to:**
- 2. Diagnosis:** Congestive Heart Failure
- 3. Condition:**
- 4. Vital signs:** q1h. Call physician if P>120; BP >150/100 <80/60; T >38.5°C; R >25 <10.
- 5. Activity:** Bed rest with bedside commode.
- 6. Nursing:** Daily weights, measure inputs and outputs, Head of bed at 45 degrees, legs elevated.
- 7. Diet:** 1-2 gm salt, cardiac diet.
- 8. IV Fluids:** Hep-lock with flush q shift.
- 9. Special Medications:**
 - Oxygen 2-4 L/min by NC.

Diuretics:

- Furosemide 10-160 mg IV qd or 20-80 mg PO qAM [20,40,80 mg] **OR**
- Bumetanide (Bumex) 0.5-1 mg IV q2-3h until response; then 0.5-1.0 mg IV q8-24h (max 10 mg/d); or 0.5-2.0 mg PO qAM.

- Metolazone (Zaroxolyn) 2.5-10 mg PO qd, max 20 mg/d; 30 min before loop diuretic [2.5,5,10 mg].

Digoxin:

- Digoxin Maintenance - 0.125-0.5 mg PO or IV qd [0.125,0.25, 0.5 mg].

Angiotensin- II Receptor Antagonist:

- Losartan (Cozaar) 25-50 mg PO qd-bid, max 100 mg/day [25, 50 mg]; does not cause cough or angioedema.

ACE Inhibitors:

- Quinapril (Accupril) Initially 5-10 mg PO qd, then 20-80 mg PO qd in 1 to 2 divided doses [5,10,20,40 mg] **OR**
- Lisinopril (Zestril, Prinivil) 5-40 mg PO qd [5,10,20,40 mg] **OR**
- Benazepril (Lotensin) 10-40 mg PO qd, max 80 mg/d [5,10,20,40 mg] **OR**
- Fosinopril (Monopril) 10-40 mg PO qd, max 80 mg/d [10,20 mg] **OR**
- Ramipril (Altace) 2.5-10 mg PO qd, max 20 mg/d [1.25,2.5,5,10 mg].
- Captopril (Capoten) 6.25-50 mg PO q8h [12.5, 25,50,100 mg] **OR**
- Enalapril (Vasotec) 1.25-5 mg slow IV push q6h or 2.5-20 mg PO bid [5,10,20 mg] **OR**
- Moexipril (Univasc) initially 7.5 mg PO qd, then 7.5-15 mg PO qd-bid [7.5, 15 mg tabs].

Inotropic Agents:

- Dopamine 3-15 mcg/kg/min IV (400 mg in 250 cc D5W, 1600 mcg/mL), titrate to CO >4, CI >2; systolic > 90 **AND/OR**
- Dobutamine 2.5-10 mcg/kg/min, max of 14 mcg/kg/min (500 mg in 250 mL D5W, 2 mcg/mL) **AND/OR**
- Milrinone (Primacor) 50 mcg/kg IV over 10 min, followed by 0.375-0.75 (average 0.5) mcg/kg/min IV infusion (40 mg in 200 mLs NS (QS), conc=0.2 mg/mL).

Nitrates:

- Nitroglycerine 10 mcg/min IV (50 mg in 250-500 mL D5W) **OR**
- Isosorbide dinitrate (Isordil) 40 mg PO qid.

Other Agents and Potassium:

- KCL (Micro-K) 20-60 mEq PO qd.

10. Symptomatic Medications:

- Heparin 5000 U SQ q12h.
- Docusate sodium 100-200 mg PO qhs.
- Ranitidine (Zantac) 150 mg PO bid or 50 mg IV q8h.

11. Extras: CXR PA & LAT, ECG now & repeat if chest pain or palpitations, echocardiogram, radionuclide ventriculogram.

12. Labs: SMA 7 & 12, CBC; cardiac enzymes: CPK, CPK-MB, STAT & q6h x 24h. Repeat SMA 7 in AM. Digoxin level. UA.

13. Other orders and meds:

Paroxysmal Supraventricular Tachycardia

- 1. Admit to:**
- 2. Diagnosis:** PSVT
- 3. Condition:**
- 4. Vital signs:** q1h. Call physician if BP >160/90, <90/60; apical pulse >130, <50; R >25, <10; T >38.5°C
- 5. Activity:** Bedrest with bedside commode.
- 6. Nursing:**
- 7. Diet:** Low fat, low cholesterol, no caffeine.
- 8. IV Fluids:** D5W at TKO.

9. Special Medications:

Attempt vagal maneuvers (Valsalva maneuver and/or carotid sinus massage) before drug therapy (If no bruits).

Cardioversion (if unstable or refractory to drug therapy):

1. NPO x 6h, dig level ≤ 2.4 & potassium must be normal.
2. Midazolam (Versed) 2.5 mg IV.
3. If stable, cardiovert with synchronized 10-50 J, increase by 50 J increments. If unstable, start with 75-100 J, then increase to 200 J and 360 J.

Pharmacologic Therapy of PSVT:

- Adenosine (Adenocard) 6 mg rapid IV over 1-2 sec, followed by saline flush, may repeat 12 mg IV after 2-3 min, up to max of 30 mg total (ineffective if on theophylline) **OR**
- Verapamil (Isoptin) 2.5-10 mg IV over 2-3min (may give calcium gluconate 1 gm IV over 3-6 min prior to verapamil); then 40-120 mg PO q8h or verapamil SR 120-240 mg PO qd **OR**
- Esmolol hydrochloride (Brevibloc) 500 mcg/kg IV over 1 min, then 50 mcg/kg/min IV infusion titrated to HR of <60 (max of 300 mcg/kg/min) **OR**
- Diltiazem (Cardizem) 0.25 mg/kg (ave 20 mg) IV over 2 min, then 5-15 mg/hr IV infusion [100 mg/D5W 250 mLs (QS); conc 0.4 mg/mL]. For control of ventricular response rate only in atrial fibrillation/flutter.
- Propranolol 1-5 mg (0.15 mg/kg) given IV in 1 mg aliquots min; then 60-80 mg PO tid; propranolol-LA (Inderal-LA), 80-120 mg PO qd [60, 80, 120, 160 mg] **OR**
- Digoxin aliquots of 0.25 mg q4h as needed; then 0.125-0.25 mg PO or IV qd.

10. Symptomatic Medications:

- Lorazepam (Ativan) 1-2 mg PO tid prn anxiety.

11.Extras: Portable CXR, ECG; repeat if chest pain. Cardiology consult.

12.Labs: CBC, SMA 7 & 12, Mg, thyroid panel. Drug levels, toxicology screen, UA.

13. Other Orders and Meds:

Ventricular Arrhythmias

1. Ventricular Fibrillation & Tachycardia:

-**If unstable (see ACLS protocol page 6):** Defibrillate with unsynchronized 200 J, then 300 J.

-Oxygen 100% by mask.

-Lidocaine loading dose 75-100 mg IV, then 2-4 mg/min IV **OR**

-Procainamide loading dose 10-15 mg/kg at 20 mg/min IV or 100 mg IV q5min, then 1-4 mg/min IV maintenance **OR**

-Bretylium loading dose 5-10 mg/kg over 5-10 min, then 1-4 mg/min IV.

-Amiodarone (Cordarone) 150 mg in 100 mLs of D5W, IV infusion over 10 min, then 900 mg in 500 mLs of D5W, at 1 mg/min for 6 hrs, then at 0.5 mg/min for 18 hrs (total 1050 mg in first 24 hrs). A maintenance infusion of 0.5 mg/min (720 mg in 500 mLs of D5W over 24 hrs) may be continued thereafter. Use an in-line filter during administration.

-**Also see "other antiarrhythmics" below.**

2. Torsades De Pointes Ventricular Tachycardia:

-Correct underlying cause & consider discontinuing quinidine, procainamide, disopyramide, moricizine, lidocaine, amiodarone, phenothiazine, haloperidol, tricyclic and tetracyclic

antidepressants, ketoconazole, itraconazole, terfenadine, astemizole, bepridil, hypokalemia, and hypomagnesemia.

-Magnesium sulfate (drug of choice) 1-4 gm in IV bolus over 5-15 min or infuse 3-20 mg/min for 7-48h until QT interval <0.5 sec.

-Isoproterenol (Isuprel), 2-20 mcg/min (2 mg in 500 mL D5W, 4 mcg/mL) **OR**

-Phenytoin (Dilantin) 100-300 mg IV given in 50 mg aliquots q5min.

-Consider ventricular pacing and/or cardioversion.

3. Other Antiarrhythmics:

Class I:

-Moricizine (Ethmozine) 200-300 mg PO q8h, max 900 mg/d.

Class Ia:

-Quinidine sulfate 200-600 mg PO q4-6h (max 2.4 gm/d) or gluconate 324-648 mg PO q8-12h **OR**

-Procainamide PO loading dose of 750-1000 mg (15 mg/kg) in 2-3 divided doses, then 250-1000 mg PO q4-6h or 1 gm IV load given as 100 mg IV q5min or 20 mg/min until arrhythmia suppressed, then 2-6 mg/min IV infusion **OR**

-Disopyramide 100-300 mg PO q6-8h.

Class Ib:

-Lidocaine 75-100 mg IV, then 2-4 mg/min IV **OR**

-Mexiletine (Mexitil) 100-200 mg PO q8h, max 1200 mg/d **OR**

-Tocainide (Tonocard) loading 400-600 mg PO, then 400-600 mg PO q8-12h (1200-1800 mg/d PO in divided doses q8-12h **OR**

-Phenytoin, loading dose 100-300 mg IV given as 50 mg in NS over 10 min IV q5min, then 100 mg IV q5min prn.

Class Ic:

-Flecainide (Tambocor) 50-100 mg PO q12h, max 400 mg/d.

-Propafenone (Rythmol) 150-300 mg PO q8h, max 1200 mg/d.

Class II:

- Propranolol 1-3 mg IV in NS (max 0.15 mg/kg) or 20-80 mg PO q6h (80-160 mg/d); propranolol-LA (Inderal-LA), 80-120 mg PO qd [60, 80, 120, 160 mg] **OR**
- Esmolol loading dose 500 mcg/kg over 1 min, then 50-200 mcg/kg/min IV infusion **OR**
- Atenolol 50-100 mg/d PO **OR**
- Nadolol 40-100 mg PO qd-bid **OR**
- Metoprolol 50-100 mg PO bid-tid **OR**
- Timolol 20 mg/d PO.

Class III:

- Amiodarone (Cordarone) PO loading 400-1200 mg/d in divided doses x 5-14 days, then 200-400 mg PO qd (5-10 mg/kg) **OR**
 - Amiodarone (Cordarone) 150 mg in 100 mLs of D5W, IV infusion over 10 min, then 900 mg in 500 mLs of D5W, at 1 mg/min for 6 hrs, then at 0.5 mg/min for 18 hrs (total 1050 mg in first 24 hrs). A maintenance infusion of 0.5 mg/min (720 mg in 500 mLs of D5W over 24 hrs) may be continued thereafter. Use an in-line filter during administration.
 - Bretylium 5-10 mg/kg IV over 5-10 min, then maintenance of 1-4 mg/min IV or repeat boluses 5-10 mg/kg IV q6-8h; infusion of 1-4 mg/min IV.
 - Sotalol (Betapace) 40-80 mg PO bid, max 320 mg/d in 2-3 divided doses.
- 4. Extras:** CXR, ECG, echocardiogram, Holter monitor, signal averaged ECG, cardiology consult.
 - 5. Labs:** SMA 7&12, Mg, calcium, CBC, LFT's, drug levels, thyroid function test. UA.
 - 6. Other Orders and Meds:**
-

Hypertensive Emergencies

1. **Admit to:**
2. **Diagnosis:** Emergencies Hypertension
3. **Condition:**
4. **Vital signs:** q30min until BP controlled, then q4h. Call physician if sudden change in BP >30 mmHg systolic; BP systolic >200, <90; diastolic >120, <60; P >120
5. **Activity:** bed rest
6. **Nursing:** Intra-arterial BP monitoring, daily weights, I&O.
7. **Diet:** Clear liquids.
8. **IV Fluids:** D5W at TKO.
9. **Special Medications:**
 - Nitroprusside sodium 0.25-10 mcg/kg/min IV (50 mg in 250 mL of D5W), titrate to desired BP. Discontinue if acute fall in BP >30 systolic **OR**
 - Labetalol (Trandate, Normodyne) 20 mg IV bolus (0.25 mg/kg), then 20-80 mg boluses IV q10-15min titrated to desired BP (max of 300 mg). Infusion of 1.0-2.0 mg/min **OR**
 - Clonidine (Catapres), initial 0.1-0.2 mg PO followed by 0.05-0.1 mg per hour until DBP <115 (max total dose of 0.8 mg); then 0.1-2.4 mg/d in divided doses bid-tid, max 2.4 mg/d. Clonidine patch (Catapres-TTS) 0.1-0.3 mg/24h apply q7 days [0.1,0.2,0.3 mg/24h] **OR**
 - Nifedipine (Procardia) 5-20 mg SL or PO (bite & swallow punctured capsule, 0.25-0.5 mg/kg/dose), repeat prn **OR**
 - Phentolamine (pheochromocytoma), 5-10 mg IV, repeated as needed up to 20 mg. Monoamine oxidase inhibitor with hypertensive crisis 5 mg slow IV push q4-6h (norepinephrine at bedside to treat hypotension). **OR**

-Trimethaphan camsylate (Arfonad)(dissecting aneurysm) 2-4 mg/min IV infusion (500 mg in 500 mL D5W).

10. Symptomatic Medications:

11. Extras: Portable CXR, ECG, echocardiogram.

12. Labs: CBC, SMA 7, UA with micro. Thyroid stimulating hormone, free T4, 24h urine for metanephrine. Plasma catecholamines, urine drug screen.

13. Other Orders and Meds:

Syncope

1. Admit to:

2. Diagnosis: Syncope

3. Condition:

4. Vital signs: q1h, postural BP & pulse q12h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10

5. Activity: Bed rest.

6. Nursing: Fingertick glucose.

7. Diet: Regular

8. IV Fluids: D5W at TKO.

9. Special medications:

Vasovagal Syncope:

-Scopolamine 1.5 mg transdermal patch q3 days.

Postural Syncope:

-Fludrocortisone 0.1-1 mg/d PO.

-Ibuprofen 200-800 mg PO qid.

10. Extras: CXR, ECG, signal averaged ECG, 24h Holter monitor, tilt test, EEG, echocardiogram, carotid duplex scan, CT/MRI.

11. Labs: CBC, SMA 7 & 12, CPK isoenzymes, Mg, Calcium. Blood alcohol, drug levels. UA, urine drug screen.

12. Other Orders and Meds:

Pulmonology

Asthma

- 1. Admit to:**
- 2. Diagnosis:** Exacerbation of asthma
- 3. Condition:**
- 4. Vital signs:** q6h. Call physician if P >140; R >30, <10; T >38.5°C; pulse oximeter O₂ Sat <90%
- 5. Activity:**
- 6. Nursing:** Pulse oximeter, peak flow rate pre & post bronchodilator treatments, pulse oximeter. Avoid aspirin containing medications and sedatives. Measure bedside peak respiratory flow q2h with portable peak flowmeter.
- 7. Diet:** Regular, no caffeine.
- 8. IV Fluids:** D1 1/2 NS, at 125 cc/h.
- 9. Special Medications:**
 - Oxygen 2-6 L/min by NC. Keep O₂ sat >90%.

Beta Agonists, Acute Treatment:

- Albuterol (Ventolin), 0.2-0.5 mL (2.5 mg) in 3 mL saline q2-8h prn (5 mg/mL sln) **OR**
- Albuterol (Ventolin) or Metaproterenol (Alupent) MDI 3-8 puffs, then 2 puffs q3-6h prn or powder 200 mcg/capsule inhaled qid prn.

Systemic Corticosteroids:

- Methylprednisolone (Solu-Medrol) 60-125 mg IV q6h; then 30-60 mg PO qd. **OR**
- Prednisone 20-60 mg PO qAM.

Aminophylline and Theophylline (second-line therapy):

- Aminophylline load dose: 5.6 mg/kg **total** body weight in 100 mL D5W IV over 20min. Maintenance of 0.5-0.6 mg/kg **ideal** body weight/h (500 mg in 250 mL D5W); reduce if elderly, heart/liver failure (0.2-0.4 mg/kg/hr); may need up to 0.8-0.9 mg/kg/h if smoker. Reduce load 50-75% if taking theophylline (1 mg/kg of aminophylline will raise levels 2 mcg/mL) **OR**
- Theophylline IV solution loading dose 4.5 mg/kg **total** body weight, then 0.4-0.5 mg/kg **ideal** body weight/hr.
- Theophylline (Theo-Dur) PO loading dose of 6 mg/kg, then maintenance of 100-400 mg PO bid-tid (3 mg/kg q8h); 80% of total daily IV aminophylline in 2-3 doses.

Inhaled Corticosteroids (adjunct therapy):

- Beclomethasone (Beclovent)(when off IV steroids) MDI 2-6 puffs qid, with spacer 5min after bronchodilator, followed by gargling with water **OR**
- Triamcinolone (Azmacort) MDI 1-4 puffs tid-qid **OR**
- Flunisolide (AeroBid) MDI 2-4 puffs bid **OR**
- Budesonide 200-800 mcg qid MDI (50 mcg/puff or 250 mcg/puff).
- After stabilization, inhaled corticosteroids should be the mainstay of treatment.

Beta Agonists, Ipratropium, and Cromolyn:

- Pirbuterol (Maxair) MDI 2 puffs q4-6h **OR**
- Bitolterol (Tornalate) MDI 2-3 puffs q1-3min initially, then 2-3 puffs q4-8h **OR**
- Fenoterol (Berotec) MDI 3 puffs initially, then 2 bid-qid.
- Salmeterol (Serevent) 2 puffs bid; should not be used for acute asthma because of delayed onset of action.
- Ipratropium Bromide (Atrovent) MDI 2-3 puffs tid-qid

-Cromolyn sodium (Intal) MDI 2 puffs qid.

Acute Bronchitis

-Ampicillin/sulbactam (Unasyn) 1.5 gm IV q6h **OR**

-Ampicillin 0.5-1 gm IV q6h or 250-500 mg PO qid **OR**

-Cefuroxime (Zinacef) 750 mg IV q8h **OR**

-Bactrim DS, 1 tab PO bid **OR**

-Amoxicillin/clavulanate (Augmentin) 250-500 mg PO q8h

10. Symptomatic Medications:

-Docusate sodium (Colace) 100-200 mg PO qhs.

-Ranitidine (Zantac) 50 mg IV q8h or 150 mg PO bid.

11. Extras: Portable CXR, ECG, pulmonary function tests pre and post bronchodilators; pulmonary rehabilitation, home peak flow measurement training.

12. Labs: ABG, CBC, SMA7. Theophylline level stat & after 24h of infusion. Sputum Gram stain, C&S.

13. Other Orders and Meds:

Chronic Obstructive Pulmonary Disease

1. Admit to:

2. Diagnosis: Exacerbation of COPD

3. Condition:

4. Vital signs: q4h. Call physician if P >130; R >30, <10; T >38.5°C; O₂ Sat <90%.

5. Activity: Bed rest, up in chair if able; bedside commode.

6. Nursing: Pulse oximeter. Measure peak flow with portable peak flowmeter bid and chart with vital signs. No sedatives.

7. Diet: No added salt, no caffeine. Push fluids.

8. IV Fluids: D5 1/2 NS with 20 mEq KCL/L at 125 cc/h.

9. Special Medications:

- O₂ 1-2 L/min by NC or 24-35% by Venturi mask, keep O₂ saturation 90-91%. (Monitor PCO₂ if chronic hypercapnia).

Beta Agonists, Acute Treatment (mainstay of symptomatic therapy):

- Nebulized Albuterol (Ventolin) 0.2-0.5 mL (2.5 mg) in 3 mL of saline q2-8h prn (5 mg/mL sln) **OR**
- Albuterol (Ventolin) or Metaproterenol (Alupent) MDI 2-4 puffs q4-6h prn.
- Salmeterol (Serevent) 2 puffs bid; should not be used for acute asthma because of delayed onset of action.

Corticosteroids & Anticholinergics:

- Methylprednisolone (Solu-Medrol) 60-125 mg IV q6h or 30-60 mg PO qd **Followed by:**
- Prednisone 20-60 mg PO qd, taper to minimum dose. Over 2 weeks if possible.
- Triamcinolone (Azmacort) MDI 2-4 puffs qid **OR**
- Beclomethasone (Beclivent) MDI 2-6 puffs qid, with spacer, 5 min after bronchodilator, followed by gargling with water **OR**
- Flunisolide (AeroBid) MDI 2-4 puffs bid **OR**
- Ipratropium Bromide (Atrovent) MDI 2 puffs tid-qid

Aminophylline & Theophylline (second line therapy; useful in sympathetic assistant or nocturnal asthma):

- Aminophylline loading dose - 5.6 mg/kg **total** body weight over 20 min (if not already on theophylline); then 0.5-0.6 mg/kg **ideal** body weight/hr (500 mg in 250 mL of D5W at 20 cc/h); reduce if elderly, or heart or liver disease (0.2-0.4 mg/kg/hr). Reduce loading to 50-75% if already taking theophylline (1 mg/kg of aminophylline will raise levels by 2 mcg/mL) **OR**

- Theophylline IV solution loading dose, 4.5 mg/kg **total** body weight, then 0.4-0.5 mg/kg **ideal** body weight/hr.
- Theophylline long acting (Theo-Dur) PO maintenance dose of 100-400 mg PO bid-tid (3 mg/kg q8h); 80% of daily IV aminophylline in 2-3 doses.

Acute Bronchitis

- Ampicillin 1 gm IV q6h or 250-500 mg PO qid **OR**
- Trimethoprim/Sulfamethoxazole (Septra DS) 160/800 mg PO bid or 160/800 mg IV q8-12h (10-15 mL in 100 cc D5W tid)
OR
- Cefuroxime (Zinacef) 750 mg IV q8h **OR**
- Ampicillin/sulbactam (Unasyn) 1.5 gm IV q6h **OR**
- Cefuroxime (Ceclor) 1.5 gm IV q8h **OR**
- Doxycycline (Virba-tabs) 100 mg PO bid.

10. Symptomatic Medications:

- Docusate sodium (Colace) 100-200 mg PO qhs.
- Ranitidine (Zantac) 150 mg PO bid or 50 mg IV q8h.

11. Extras: Portable CXR, PFT's with bronchodilators, ECG.

12. Labs: ABG, CBC, SMA7. UA. Theo level stat & after 12-24h of infusion. Sputum Gram stain & C&S; alpha 1 antitrypsin level.

13. Other Orders and Meds:

Hemoptysis

- 1. Admit to:**
- 2. Diagnosis:** Hemoptysis
- 3. Condition:**
- 4. Vital signs:** q1-6h; Orthostatic BP & pulse bid. Call physician if BP >160/90, <90/60; P >130, <50; R>25, <10; T >38.5°C; O₂ sat <90%
- 5. Activity:** Bed rest with bedside commode. Keep patient in lateral decubitus, Trendelenburg's position, bleeding side down.
- 6. Nursing:** Quantify all sputum and expectorated blood; suction prn. O₂ at 100% by mask, pulse oximeter. Discontinue narcotics & sedatives. Have double lumen endotracheal tube available for use.
- 7. Diet:**
- 8. IV Fluids:** NS at 0.5-1 L/hr x 1-3 L (≥16 gauge), then transfuse PRBC, Foley to gravity.
- 9. Special Medications:**
 - Transfuse 2-6 U PRBC over 2-6h.
 - Phenergan with codeine 5 cc PO q4-6h prn. Contraindicated in massive hemoptysis.
- 10. Other Considerations:**
 - Consider empiric antibiotics if any suggestion that bronchitis or infection may be contributing to hemoptysis.
- 11. Extras:** CXR PA, LAT, ECG, VQ scan, contrast CT, bronchoscopy. PPD & controls, pulmonary & thoracic surgery consults.
- 12. Labs:** Type & cross 4-6 U PRBC. ABG, CBC, platelets, SMA7 & 12, ESR. Anti-glomerular basement antibody, rheumatoid factor, complement, anti-nuclear cytoplasmic antibody.

Sputum Gram stain, C&S, AFB, fungal, & cytology qAM x 3 days.
UA, INR/PTT, von Willebrand Factor. Repeat CBC q6h.

13. Other Orders and Meds:

Anaphylaxis

1. **Admit to:**
2. **Diagnosis:** Anaphylaxis
3. **Condition:**
4. **Vital signs:** q1-6h; Call physician if BP systolic >160, <90; diastolic. >90, <60; P >120, <50; R>25, <10; T >38.5°C
5. **Activity:** Bedrest
6. **Nursing:** I&O q1-6h, O₂ at 6 L/min by NC or mask. Place patient in Trendelenburg's position, No. 4 or 5 endotracheal tube at bedside.
7. **Diet:** NPO
8. **IV Fluids:** 2 IV lines. Normal saline or LR 1-4 L over 1-3h, then D5 1/2 NS at 150-200 cc/h. Foley to closed drainage.
9. **Special Medications:**

Gastrointestinal Decontamination:

- Gastric lavage if indicated for recent oral ingestion.
- Activated charcoal 50-100 gm, followed by cathartic.

Bronchodilators:

- Epinephrine (1:1000) 0.3-0.5 mL SQ or IM q10min or 1-4 mcg/min IV **OR** in severe life threatening reactions give 0.5 mg (5.0 mL of 1: 10,000 sln) IV q5-10min prn. **OR** dilute in 10 mL NS & give via endotracheal tube. Epinephrine, 0.3 mg of 1:1000 sln may be injected SQ at site of allergen injection **OR**

- Aerosolized 2% racemic epinephrine 0.5-0.75 mL **OR**
- Albuterol (Ventolin) 0.5%, 0.5 mL in 2.5 mL NS q30min by nebulizer prn.
- Aminophylline loading dose 5.6 mg/kg **total** body weight IV, then infuse 0.3-0.9 mg/kg **ideal** body weight/h **OR**
- Theophylline IV solution, loading dose 4.5 mg/kg **total** body weight, then 0.4-0.5 mg/kg **ideal** body weight/hr.

Corticosteroids:

- Methylprednisolone (Solu-Medrol) 50 mg IV q4-6h **OR**
- Methylprednisolone acetate (Depo-Medrol) 40-80 mg IM **OR**
- Hydrocortisone Sodium Succinate 200-500 mg IV q4-6h (IV steroids should be followed by PO steroids). (Consider 8-14 day taper).

Antihistamines:

- Diphenhydramine (Benadryl) 25-50 mg IV, IM or PO q2-4h **OR**
- Hydroxyzine (Vistaril) 25-50 mg IV, IM or PO q2-4h.
- Cimetidine (Tagamet) 300 mg IV or PO q6h **OR**
- Ranitidine (Zantac) 150 mg IV or PO bid.

Pressors & other Agents:

- Norepinephrine (Levophed) 8-12 mcg/min IV, adjust to systolic 100 mmHg (8 mg in 500 mL D5W) **OR**
- Isoproterenol (Isuprel) 0.5-5 mcg/min IV **OR**
- Dopamine (Intropin) 5-20 mcg/kg/min IV.

10. Extras: Portable CXR, ECG, allergy/immunology consult.

11. Labs: CBC, SMA 7&12; 24h urine for 5-hydroxyindoleacetic acid (carcinoid), UA.

12. Other Orders and Meds:

Pleural Effusion

- 1. Admit to:**
- 2. Diagnosis:** Pleural effusion
- 3. Condition:**
- 4. Vital signs:** q shift; Call physician if BP >160/90, <90/60; P>120, <50; R>25, <10; T >38.5°C
- 5. Activity:**
- 6. Diet:** Regular.
- 7. IV Fluids:** D5W at TKO
- 8. Extras:** CXR PA & LAT repeat after thoracentesis; bilateral lateral decubitus, ECG, ultrasound; PPD with control antigens (candida, mumps); pulmonary consult.
- 9. Labs:** CBC, SMA 7 & 12, protein, albumin, amylase, rheumatoid factor, ANA, ESR, INR/PTT, UA. Fungal serologies, amebic titer.

Pleural fluid:

Tube 1 - LDH, protein, amylase, triglyceride, glucose (10 mL).

Tube 2 - Gram stain, C&S, AFB, fungal C&S (20-60 mL, heparinized).

Tube 3 - Cell count and differential (5-10 mL, EDTA).

Syringe - pH (2 mL collected anaerobically, heparinized on ice)

Bag or Bottle - Cytology.

10. Other Orders and Meds:

Hematology

Anticoagulant Overdose

Heparin Overdose:

1. Discontinue heparin infusion
2. Protamine sulfate, 1 mg IV for every 100 units of heparin infused in preceding 2h, dilute in 25-50 mL fluid IV over 10-20 min (max 50 mg in 10 min period). Watch for signs of anaphylaxis, especially if patient has been on NPH insulin therapy.

Warfarin (Coumadin) Overdose:

-Gastric lavage & activated charcoal if recent oral ingestion. Discontinue Coumadin and heparin and monitor hematocrit q2h.

Minor Bleeds:

-Vitamin K (Phytonadione), 5-10 mg PO or 2.5-5 mg SQ or 10 mg IV doses q12h, titrated to desired INR check INR q12h until stable.

Serious Bleeds:

-Vitamin K (Phytonadione), 10-20 mg in 50-100 mL fluid IV over 30-60 min (INR q6h until stable) **OR**

-Fresh frozen plasma, 2-3 units (severe bleeds).

Labs: CBC, check platelets (if <50,000, transfuse 4-6 U platelets), PTT, INR.

Other orders and meds:

Deep Vein Thrombosis

1. Admit to:

2. Diagnosis: Deep vein thrombosis

3. Condition:

4. Vital signs: q shift; Call physician if BP systolic >160, <90 diastolic. >90, <60; P >120, <50; R>25, <10; T >38.5°C.

5. Activity: Bed rest with legs elevated.

6. Nursing: Guaiac stools, warm packs to leg prn; keep leg elevated; measure calf circumference qd; no intramuscular injections or aspirin products.

7. Diet: Regular

8. IV Fluids: D5W at TKO

9. Special Medications:

Anticoagulation:

-Heparin IV bolus 5000-10,000 Units (100 U/kg) IVP, then 1000-1500 U/h IV infusion (20 U/kg/h; 15 U/kg/h if ≥ 80) [25,000 U in 500 ml D5W (50 U/ml)]. Check PTT 6 hours after initial bolus; adjust q6h until PTT 1.5-2 times control (50-70 sec). Discontinue heparin when INR in therapeutic range for two consecutive days.

-Warfarin (Coumadin) 5-10 mg PO qd x 2-3 d, then titrate based on rate of rise of INR; maintain INR 2.0-3.0 (INR 3.0-4.5 if recurrent thrombosis). May initiate Coumadin on second day of heparin if the PTT is in therapeutic range; discontinue heparin when INR is therapeutic for two consecutive days.

10. Symptomatic Medications:

-Propoxyphene/acetaminophen (Darvocet N100) 1-2 tab PO q3-4h prn pain

-Docusate sodium (Colace) 100-200 mg PO qhs.

-Ranitidine (Zantac) 150 mg PO bid.

11. Extras: CXR PA & LAT, ECG; impedance plethysmography & Doppler scan of legs, venography. V/Q scan. Contrast verogram (lower extremities).

12. Labs: CBC & INR/PTT, SMA 7. UA with dipstick for blood. PTT 6h after bolus & q4-6h until PTT 1.5-2.0 x control then qd. INR at initiation of warfarin & qd. Protein counterimmuno-electrophoresis, antithrombin III.

13. Other Orders and Meds:

Pulmonary Embolism

1. Admit to:

2. Diagnosis: Pulmonary embolism

3. Condition:

4. Vital signs: q1h x 12h, then qid; Call physician if BP >160/90, <90/60; P >120, <50; R >30, <10; T >38.5°C; O₂ sat < 90%

5. Activity: Bedrest with bedside commode

6. Nursing: Pulse oximeter, guaiac stools, O₂ at 2-4 L by NC. No intramuscular injections; bed board, antiembolism stockings

7. Diet: Regular

8. IV Fluids: D5W at TKO.

9. Special Medications:

Anticoagulation:

-Heparin IV bolus 5000-10,000 Units (100 U/kg) IVP, then 1000-1500 U/h IV infusion (20 U/kg/h; 15 U/kg/h if ≥ 80) [25,000 U in 500 ml D5W (50 U/ml)]. Check PTT 6 hours after initial bolus; adjust q6h until PTT 1.5-2 times control

(60-80 sec). Discontinue heparin when INR in therapeutic range for two consecutive days.

-Warfarin (Coumadin) 5 -10 mg PO qd x 2-3 d, then 2-5 mg PO qd based on rate of rise of INR. Maintain INR of 2.0-3.0 (INR 3.0-4.5 if recurrent pulmonary embolism). Check INR at initiation of warfarin & qd. May initiate Coumadin on second day of heparin if the PTT is in therapeutic range; discontinue heparin when INR is therapeutic for two consecutive days.

Thrombolytics (symptoms <48 hours, positive angiogram, no contraindications. Indicated if hemodynamically compromised):

Baseline Labs: CBC, PT/PTT, fibrinogen.

Alteplase (Recombinant Tissue Plasminogen Activator, Activase): 100 mg IV infusion over 2 hours, followed by heparin infusion at 15 U/kg/h (no loading dose) to maintain PTT 1.5-2.5 x control.

OR

Streptokinase: Pretreat with methylprednisolone 250 mg IVP and diphenhydramine (Benadryl) 50 mg IVP. Then give streptokinase, 250,000 units IV over 30 min, then 100,000 units/h for 24-72 hours. Initiate heparin infusion at 10 U/kg/hour (no loading dose); maintain PTT 1.5-2.5 x control.

10. Symptomatic Medications:

- Meperidine (Demerol) 25-100 mg IV prn pain.
- Docusate sodium (Colace) 100-200 mg PO qhs.
- Ranitidine (Zantac) 150 mg PO bid.

11. Extras: CXR PA & LAT, ECG, VQ scan; pulmonary angiography; impedance plethysmography of lower extremities, Doppler scan or contrast venogram of lower extremities.

12. Labs: CBC, INR/PTT, fibrinogen, SMA7, ABG, cardiac enzymes. UA with urine dipstick for blood. PTT 6 hours after bolus

& q4-6h until PTT 1.5-2.5 x control, then. INR at initiation of warfarin & qd.

13. Other Orders and Meds:

Sickle Cell Crisis

1. **Admit to:**

2. **Diagnosis:** Sickle Cell Crisis

3. **Condition:**

4. **Vital signs:** q shift.

5. **Activity:** Bedrest

6. **Nursing:**

7. **Diet:** Regular diet, push oral fluids.

8. **IV Fluids:** D5 1/2 NS at 100-175 mL/h.

9. **Special Medications:**

-Oxygen 2-4 L/min by NC or 30-100% by mask.

-Meperidine (Demerol) 50-150 mg IM/IV/SC q4-6h.

-Hydroxyzine (Vistaril) 25-100 mg IM/IV/PO q3-4h prn pain.

-Morphine sulfate 10 mg IV/IM/SC q2-4h prn **OR** follow bolus by infusion of 0.05-0.1 mg/kg/h or 10-30 mg PO q4h **OR**

-Ketorolac (Toradol) 60 mg IM then 30 mg IM q6h (maximum of 5 days)

-Acetaminophen/codeine (Tylenol 3) 1-2 tabs PO q4-6h prn.

-Folic acid 1 mg PO qd.

-Penicillin V (prophylaxis), 250 mg PO bid [tabs 125,250,500 mg].

-Diazepam (Valium) 2-10 mg PO q8h prn muscle spasms.

-Prochlorperazine (Compazine) 5-10 mg PO on IM q6h prn nausea or vomiting.

Vaccination (especially if splenectomized):

-Pneumovax (23V) before discharge 0.5 cc IM x 1 dose; once in a lifetime.

-Influenza vaccine (Fluogen) 0.5 cc IM once a year.

10. Extras: CXR.

11. Labs: CBC, SMA 7, blood C&S, reticulocyte count, type & hold, parvovirus titers. UA, urine C&S.

12. Other Orders and Meds:

Infectious Diseases

Empiric Therapy of Meningitis

- 1. Admit to:**
- 2. Diagnosis:** Meningitis.
- 3. Condition:**
- 4. Vital signs:** q1-6h; Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >39°C or less than 36°C
- 5. Activity:** Bed rest with bedside commode.
- 6. Nursing:** Respiratory isolation. I&O, daily weights, lumbar puncture tray at bedside.
- 7. Diet:**
- 8. IV Fluids:** D5W at TKO
- 9. Special Medications:**

Meningitis Empiric Therapy 15-50 years old

-Ampicillin 2 gm IV q4h (with 3rd gen cephalosporin) **AND EITHER**

Ceftriaxone (Rocephin) 2 gm IV q12h (max 4 gm/d) **OR**

Cefotaxime (Claforan) 2 gm IV q4h **OR**

-Severe penicillin allergy.

-Chloramphenicol 50 mg/kg/d IV **AND**

-Bactrin IV 8 mg/kg/d q6h.

-IV antibiotics x 10-14 days except in Listeria. Consider dexamethasone IV.

Empiric Therapy >50 years old, Alcoholic, Corticosteroids or Hematologic malignancy or other Debilitating Condition:

-Ampicillin 2 gm IV q4h **AND EITHER**

Cefotaxime (Claforan) 2 gm IV q4h **OR**

Ceftriaxone (Rocephin) 2 gm IV q12h (max 4 g/d) **OR**

Ceftizoxime (Cefizox) 2 gm IV q4h **OR**

Ceftazidime (Fortaz) 2 gm IV q4h **OR**

-Vancomycin 1 gm IVPB q12h

-Consider dexamethasone IV.

10. Symptomatic Meds:

-Acetaminophen 325-650 mg PO/PR q4-6h prn temp >101.

11. Extras: CXR, ECG, PPD with controls, CT scan - if focal neurological signs after starting antibiotics..

12. Labs: CBC, SMA 7 & 12, osmolality. Blood C&S x 2. UA with micro, urine C&S. Stool, throat, nasal C&S. Antibiotic levels peak & trough after 3rd dose, VDRL.

CSF Tube 1 - Gram stain of fluid (or of sediment if fluid is clear), C&S for bacteria (1-4 mL).

CSF Tube 2 - Glucose, protein (1-2 mL).

CSF Tube 3 - Cell count & differential (1-2 mL).

CSF Tube 4 - Latex agglutination or counterimmunoelectrophoresis antigen tests for *S. pneumoniae*, *H. influenzae* (type B), *N. meningitidis*, *E. coli*, group B strep, viral cultures, VDRL. India ink, fungal cultures, cryptococcal antigen, AFB (8-10 mL).

13. Other Orders and Meds:

Infective Endocarditis

1. Admit to:

2. Diagnosis: Infective endocarditis

3. Condition:

4. **Vital signs:** q4h; Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C

5. **Activity:** Up ad lib

6. **Diet:** Regular

7. **IV Fluids:** Hep-lock with flush q shift.

8. **Special Medications:**

Subacute Bacterial Endocarditis Empiric Therapy:

-Penicillin G 3-5 million U IV q4h or ampicillin 2 gm IV q4h

AND

Gentamicin 80 mg (1-1.5/mg/kg) IV q8h

Acute Bacterial Endocarditis Empiric Therapy

(including IV drug abuser):

-Gentamicin 100-120 mg IV (2 mg/kg); then 80 mg (1-1.5 mg/kg) IV q8h **AND EITHER**

Nafcillin or Oxacillin 2 gm IV q4h **OR**

Vancomycin 1 gm IV q12h (1 gm in 250 mL D5W over 1h).

Streptococci viridans/bovis:

-Penicillin G 3-5 million U IV q4h for 4 weeks **OR**

-Vancomycin 1 gm IV q12h x 4 weeks **AND**

Gentamicin 70 mg (1 mg/kg) q8h for first 2 weeks.

Enterococcus:

-Gentamicin 70 mg (1 mg/kg) IV q8h x 4-6 weeks **AND EITHER**

-Penicillin G 3-5 million U IV q4h for 4-6 weeks **OR**

-Ampicillin 2 gms IV q4h for 4-6 weeks **OR**

-Vancomycin 1 gm IV q12h for 4-6 weeks.

Staphylococcus aureus (methicillin sensitive, native valve):

-Nafcillin or Oxacillin 2 gm IV q4h x 4-6 weeks **OR**

Vancomycin 1 gm IV q12h x 4-6 weeks **AND**

Gentamicin 70 mg (1 mg/kg) IV q8h for first 3-5 days.

Methicillin resistant Staphylococcus aureus (native valve):

-Vancomycin 1 gm IV q12h (1 gm in 250 mL D5W over 1h) x 4-6 weeks. ± Gentamycin 70 mg (1 mg/kg) IV q8° for 3-5 days.

Methicillin resistant Staph aureus (prosthetic valve):

-Vancomycin 1 gm IV q12h x 6 weeks **AND**
Rifampin 600 mg PO q8h x 6 weeks **AND**
Gentamicin 1 mg/kg IV q8h x 2 weeks.

Staph epidermidis (prosthetic valve):

-Vancomycin 1 gm IV q12h x 6 weeks **AND**
Rifampin 600 mg PO q8h x 6 weeks **AND**
Gentamicin 1 mg/kg IV q8h x 2 weeks.

Culture Negative Endocarditis:

-Penicillin G 3-5 million U IV q4h x 4-6 weeks **OR**
-Ampicillin 2 gm IV q4h x 4-6 weeks **AND**
Gentamicin 80 mg (1-1.5 mg/kg) q8h x 2 weeks (or use nafcillin and gentamicin if Staph aureus suspected in drug abuser or prosthetic valve).

Fungal Endocarditis:

-Amphotericin B 0.5 mg/kg/d IV (after test dose) + flucytosine 150 mg/kg/d PO.

9. Extras: CXR PA & LAT, echocardiogram, ECG.

11. Labs: CBC with differential, SMA 7 & 12. Blood C&S x 3-4 over 24h (if septic, draw over 1h before starting antibiotic), serum cidal titers, minimum inhibitory concentration, minimum bactericidal concentration. Repeat C&S in 48h, then q week. Antibiotic levels peak & trough at 3rd dose. UA, urine C&S.

12. Other Orders and Meds:

Empiric Therapy of Pneumonia

1. **Admit to:**
2. **Diagnosis:** Pneumonia
3. **Condition:**
4. **Vital signs:** q4-8h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C or O₂ saturation <90%.
5. **Activity:**
6. **Nursing:** Pulse oximeter, I&O, Nasotracheal suctioning prn, incentive spirometry.
7. **Diet:** Regular.
8. **IV Fluids:** IV D5 1/2 NS at 125 cc/hr or TKO.
9. **Special Medications:**
 - Oxygen by NC at 2-4 L/min, or 24-50% Ventimask, or 100% non-rebreather (reservoir) to maintain O₂ saturation >90%.

Community Acquired Pneumonia 5-40 years old without underlying lung disease:

- Cefuroxime 25 mg/kg IV q8h (children) or 0.75-1.5 gm IV q8h (adults) **OR**
- Ampicillin/sulbactam (Unasyn) 1.5-3.0 gm IV q6h **OR**
- Clarithromycin (Biaxin) 250-500 mg PO bid 7-10 days **OR**
- Azithromycin (Zithromax) 500 mg PO x 1, then 250 mg PO qd x 4 days **OR**
- Erythromycin (Eramycin) 500 mg IV qid.

Community Acquired Pneumonia >40 years old without underlying lung disease:

- Erythromycin 500 mg IV q6h **AND/OR**
- Cefuroxime (Zinacef) 1.5 gm IV q8h **OR**
- Cefotaxime (Claforan) 1-2 gm IV q8 **OR**
- Ceftriaxone (Rocephin) 1-2 gm IV q12h **OR**
- Ceftizoxime (Cefizox) 1-2 gm IV q8-12h **OR**

- Cefuroxime (Zinacef) 0.75-1.5 gm IV q8h **OR**
- Trimethoprim/Sulfamethoxazole (Septra DS) 6-10 mg TMP/kg/d IV in 2-3 divided doses **OR**
- Ampicillin/Sulbactam (Unasyn) 1.5 gm IV q6h. **OR**
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q4-6h (200-300 mg/kg/d). **OR**
- Piperacillin/Tazobactam (Zosyn) 3.375 gm IV q6h. **OR**
- Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h.

Nosocomial, Hospital Acquired, Broad Spectrum Antibiotics Associated Pneumonia:

- Tobramycin 80-100 mg IV q8h (3-5 mg/kg/d) **AND EITHER**
- Ceftriaxone 1-2 gm IV q12-24h **OR**
- Ceftizoxime (Cefizox) or other 3rd generation cephalosporin (see above) **OR**
- Piperacillin or Ticarcillin 3 gm IV q4-6h (with tobramycin or gentamicin) **OR**
- Piperacillin/Tazobactam (Zosyn) 3.375 gm IV q6h **OR**
- Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h (monotherapy) **OR**
- Ciprofloxacin (Cipro) 400 mg IV q12h **OR**
- Ofloxacin (Floxin) 400 mg IV q12h.

Aspiration Pneumonia (community acquired):

- Clindamycin (Cleocin) 600-900 mg IV q8h (with or without gentamicin or 3rd gen cephalosporin) **OR**
- Ampicillin/Sulbactam (Unasyn) 1.5-3 gm IV q6h (with or without gentamicin or 3rd gen cephalosporin) **OR**
- Ticarcillin/Clavulanic acid (Timentin) 3.1 gm IV q4-6h (with or without gentamicin)

Aspiration Pneumonia (nosocomial):

- Tobramycin 2 mg/kg IV then 1.7 mg/kg IV q8h **OR**
- Ceftazidime 1-2 gm IV q8h **AND EITHER**

Clindamycin (Cleocin) 600-900 mg IV q8h **OR**

Penicillin G 1-2 MU IV q4h **OR**

Ampicillin/Sulbactam or Ticarcillin/clavulanate, or
Piperacillin/Tazobactam or Imipenem/cilastatin (see above).

10. Symptomatic Medications:

-Acetaminophen (Tylenol) 650 mg 2 tab PO q3-4h prn temp
>101 or pain.

-Docusate sodium (Colace) 100-200 mg PO qhs.

-Ranitidine (Zantac) 150 mg PO bid.

11. Extras: CXR PA, LAT, ECG, PPD with control antigens
(candida, mumps).

12. Labs: CBC with differential, SMA 7 & 12, ABG. Blood C&S
x 2. Sputum gram stain, C&S. Methenamine silver sputum stain
(PCP); AFB smear/culture; fungal prep (KOH). Aminoglycoside
levels peak & trough at 3rd dose. UA, urine culture.

Cold agglutinins, titers for chlamydia pneumonia, mycoplasma,
legionella

13. Other Orders and Meds:

Specific Therapy of Pneumonia

Pneumococcal pneumoniae Pneumonia:

-Penicillin G 1-2 million units IV q4h **OR**

-Erythromycin 500 mg IV q6h.

Staphylococcus aureus Pneumonia:

-Oxacillin or Nafcillin 2 gm IV q4h **OR**

-Vancomycin 1 gm IV q12h (1 gm in 250 cc D5W over 1h).

Klebsiella pneumoniae Pneumonia:

-Gentamicin 1.5-2 mg/kg IV, then 1.0-1.5 mg/kg IV q8h (adjust for Azotemia). **AND EITHER**

Ceftriaxone (Rocephin) 2 gm IV q12h **OR**

Ceftizoxime (Cefizox) 1-2 gm IV q8h **OR**

Ceftazidime (Fortaz) 1-2 gm IV q8h.

Haemophilus influenzae:

-Ampicillin 1-2 gm IV q6h (beta-lactamase negative) **OR**

-Cefuroxime 0.75-1.5 gm IV q8h (beta-lactamase pos) **OR**

-Ceftizoxime (Cefizox) 1-2 gm IV q8h **OR**

-Chloramphenicol 0.5-1.0 gm IV q6h.

Pseudomonas aeruginosa:

-Tobramycin 1.5-2.0 mg/kg IV, then 1.5-2.0 mg/kg IV q8h (adjust for Azotemia) **AND EITHER**

Piperacillin, Ticarcillin, Mezlocillin or Azlocillin 3 gm IV q4h **OR**

Ceftazidime 1-2 gm IV q8h.

Mycoplasma pneumoniae:

-Clarithromycin (Biaxin) 250-500 mg PO bid 7-10 days **OR**

-Azithromycin (Zithromax) 500 mg PO x 1, then 250 mg PO qd x 4 days **OR**

-Erythromycin 500 mg PO or IV q6h x 14-21 days.

Legionella pneumoniae:

-Erythromycin 1.0 gm IV q6h x 21 days **AND**

Rifampin 600 mg PO qd x 21 days.

Moraxella (Branhamella) catarrhalis:

-Ampicillin/sulbactam (Unasyn) 1.5-3 gm IV q6h **OR**

-Cefuroxime 0.75-1.5 gm IV q8h **OR**

-Erythromycin 0.5-1.0 gm IV q6h.

Anaerobic Pneumonia:

-Penicillin G 1-2 MU IV q4h **OR**

-Clindamycin (Cleocin) 600-900 mg IV q8h. **OR**

-Metronidazole (Flagyl) 500 mg IV q6-8h.

13. Other Orders and Meds:

Pneumocystis Pneumonia in AIDS

1. Admit to:

2. Diagnosis: PCP pneumonia

3. Condition:

4. Vital signs: q2-6h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; O2 sat <90%

5. Activity:

6. Nursing: Pulse oximeter.

7. Diet: Regular, encourage fluids.

8. IV Fluids: D5 1/2 NS at 50-100 cc/h or TKO.

9. Special Medications:

Pneumocystis Carinii Pneumonia:

-Trimethoprim/sulfamethoxazole (Bactrim, Septra) 15 mg/kg/day (based on TMP) PO or IV in 3-4 divided doses x 21 days; drug of choice

-If moderately severe PCP (PaO₂ <70 mm Hg): Give methylprednisolone 40 mg IV q8h or prednisone 40 mg PO bid for 5 days. Taper dose to one-half this amount for the next 5 days; then 20 mg qd for an additional 11 days, for a total of 21 days.

-Pentamidine (Pentam) 3-4 mg/kg IV qd x 21 days, with methylprednisolone as above. Pentamidine is an alternate treatment if inadequate response to TMP-SMX.

-Atovaquone (Mepron) 750 mg PO tid x 21 days. Use restricted to those with mild to moderate PCP who are refractory to or intolerant of TMP-SMX.

PCP prophylaxis (previous PCP or CD4 <200, or constitutional symptoms):

-TMP/SMX DS (160/800 mg) PO qd **OR**

-Pentamidine, 300 mg in 6 mL sterile water via Respigard II nebulizer over 20-30 min q4 weeks; may pretreat with Albuterol 2.5 mg in 5 mL NS **OR**

-Dapsone (DDS) 50 mg PO qd, given 2-7 days per week, contraindicated in G-6-PD deficiency.

Antiviral Therapy:

-Zidovudine (Retrovir)(CD4 <500, symptomatic AIDS)100 mg PO q4 hours or 100 mg five times a day; some physicians prescribe 200 mg tid. Dosage may be reduced to 100 mg tid if significant anemia [100-mg caps] **OR**

-Didanosine (DDI, Videx) 200 mg PO bid for patients >60 kg; or 100 mg PO bid for patients <60 kg [100-mg, 150-mg buffered tablet may be mixed with water and taken on an empty stomach] **OR**

-Zalcitabine (DDC, Hivid) 0.375-0.75 mg PO q8h [0.375, 0.75 mg].

-Hold antiviral therapy during TMP/SMX therapy because of the marrow suppressing side effects of both drugs combined

-**Post-exposure Prophylaxis:** Zidovudine, 200 mg PO q4h x 72h, then 200 mg 5 times/day x 25 days.

**Zidovudine-Induced Neutropenia/Ganciclovir-Induced
Leucopenia**

-Recombinant human granulocyte colony-stimulating factor (G-CSF, Filgrastim, Neupogen) 1-2 mcg/kg SQ qd until

absolute neutrophil count 500-1000; indicated only if the patient's endogenous erythropoietin level is low.

10. Other Medications:

-Ranitidine (Zantac) 150 mg PO bid.

11. Extras: CXR PA & LAT.

12. Labs: ABG, CBC, SMA 7 & 12. Blood C&S x 2. Sputum for Gram stain, C&S, AFB. Giemsa immunofluorescence for Pneumocystis, fungal C&S. Induce sputum with nebulized 3% saline after gargling with 3% saline.

CD4 count, VDRL, serum cryptococcal antigen, HBsAg, anti-HBs, toxoplasmosis titer. UA.

Bronchoscopic Considerations: Consider bronchoscopy if sputum non-diagnostic or CXR is atypical for PCP or if patient not responding to empiric PCP therapy.

13. Other Orders and Meds:

Opportunistic Infections in HIV Infected Patients

Oral Candidiasis:

-Fluconazole (Diflucan) Acute: 100-200 mg po qd; higher dosages might be necessary. Maintenance: 100-200 mg po once weekly or 50-100 mg po qd **OR**

-Ketoconazole (Nizoral), acute: 400 mg po qd 1-2 weeks or until resolved. Maintenance: 200 mg po qd-bid for 7 consecutive days per month or qd if necessary. **OR**

-Clotrimazole (Mycelex) troches 10 mg dissolved slowly in mouth 5 times/d **OR**

-Nystatin (Mycostatin) 100,000 U/mL, swish and swallow 5 mL
po q 6 hr or one 500,000-unit tablet dissolved slowly in
mouth q6h **OR**

-Itraconazole (Sporanox) 200 mg PO qd x 2 weeks

Candida Esophagitis:

-Fluconazole 200-400 mg po qd x 14-21 days; higher dosages
might be required **OR**

-Ketoconazole 200 mg po bid.

-Itraconazole (Sporanox) 200 mg PO qd x 2 weeks.

-Maintenance with fluconazole (100 mg po qd) or
ketoconazole (200 mg PO qd) may be required at the lowest
effective dose.

Primary or Recurrent Mucocutaneous HSV

-Acyclovir (Zovirax), 200-400 mg po 5 times a day for 10 days,
or 5 mg/kg IV q8h **OR** In cases of acyclovir resistance,
foscarnet, 40 mg/kg IV q8h, via infusion pump only, for 21
days.

-Prophylaxis: Acyclovir (Zovirax) 400 mg PO bid.

Herpes Simplex Encephalitis (or visceral disease):

-Acyclovir 10 mg/kg IV q8h x 10-21 days.

Herpes Varicella Zoster

-Acyclovir 10 mg/kg IV over 60 min q8h for 7-14 days **OR** 800
mg PO 5 times/d x 7-10 days **OR**

-Foscarnet 40 mg/kg IV q8h.

Cytomegalovirus Infections:

-Ganciclovir (Cytovene) 5 mg/kg IV (dilute in 100 mLs D5W
over 60 min) q12h x 14-21 days for retinitis, colitis,
esophagitis (concurrent use with zidovudine may increase
hematological toxicity)

Suppressive Treatment for CMV:

-Ganciclovir 5 mg/kg IV qd, or 6 mg/kg 5 times/wk.

Toxoplasmosis:

- Clindamycin 600-900 mg po or IV qid plus pyrimethamine 25-75 mg po qd-qod plus leucovorin calcium (folinic acid) 10-25 mg po qd for 6-8 weeks for acute therapy; lifetime suppression with highest tolerated dosage **OR**
- Azithromycin (Zithromax) 1,800 mg PO first dose then 1,200 mg/day PO x 6 weeks.

Suppressive Treatment for Toxoplasmosis:

- Pyrimethamine 25-50 mg PO qd with or without sulfadiazine 0.5-1.0 Gm PO q6h; and folinic acid 5-10 mg PO qd.
- Pyrimethamine 50 mg PO qd; and clindamycin 300 mg PO q6h; and folinic acid 5-10 mg PO qd.

Cryptococcus Neoformans Meningitis:

- Amphotericin B 0.7-1.0 mg/kg/d IV; amphotericin total dosage not to exceed 2 g, with or without 5-flucytosine 100 mg/kg po qd in at divided doses for first 2-4 weeks or until clinically improved, followed by fluconazole 400 mg po qd or itraconazole 200 mg po bid 6-8 weeks

OR

- Fluconazole 400-800 mg po qd for 8-12 weeks

Suppressive Treatment for Cryptococcus:

- Fluconazole (Diflucan) 200 mg PO qd indefinitely **OR**
- Itraconazole (Sporanox) 200 mg PO qd-bid indefinitely.

Active Tuberculosis:

- Isoniazid (INH) 300 mg PO qd; and rifampin 600 mg PO qd; and pyrazinamide 15-25 mg/kg PO qd; and ethambutol 15-25 mg/kg PO qd; or streptomycin 15 mg/kg IM qd, or 20 mg/kg IM twice/wk.
- Pyridoxine (Vitamin B6) 50 mg PO qd concurrent with INH.
- All four drugs are continued for 2 months; isoniazid and rifampin (depending on susceptibility testing) are continued for a period of at least 9 months and at least 6 months after the last negative cultures.

Prophylaxis for Inactive Tuberculosis:

-Isoniazid 300 mg PO qd; and pyridoxine 50 mg PO qd x 12 months.

Disseminated Mycobacterium Avium Complex (MAC):

-Clarithromycin (Biaxin) 500-1000 mg PO bid; or Azithromycin (Zithromax) 500 mg PO qd; **AND EITHER**
Ethambutol 15-25 mg/kg PO qd, **OR**
Clofazimine (Lamprene) 100-200 mg PO qd, **OR**
Ciprofloxacin (Cipro) 750 mg PO bid or 400 mg IV bid.

Prophylaxis for MAC:

-Rifabutin (Mycobutin), 300 mg PO qd or 150 mg PO bid.

Disseminated Coccidioidomycosis:

-Amphotericin B 0.5-0.8 mg/kg IV qd, until total dose 2.0-2.5 gms. **OR**
-Fluconazole (Diflucan) 400-800 mg PO and/or IV qd.

Disseminated Histoplasmosis:

-Amphotericin B 0.5-0.8 mg/kg IV qd, until total dose 15 mg/kg. **OR**
-Fluconazole 400 mg PO qd. **OR**
-Itraconazole (Sporanox) 300 mg PO bid x 3 days, then 200 mg PO bid.
-AIDS associated diarrhea, see page 79

Suppressive Treatment for Histoplasmosis:

-Fluconazole (Diflucan) 400 mg PO qd **OR**
-Itraconazole (Sporanox) 200 mg PO bid.

Other Orders and Meds:

Septic Arthritis

1. **Admit to:**
2. **Diagnosis:** Septic arthritis
3. **Condition:**
4. **Vital signs:** q shift
5. **Activity:** No weight bearing on infected joint. Up in chair as tolerated. Bedside commode with assistance.
6. **Nursing:** Warm compresses prn, keep joint immobilized. Assist with passive range of motion exercises of the affected joint bid; otherwise, keep knee in resting splint; encourage ROM exercise of other joints
7. **Diet:** Regular diet (offer high-residue foods and prunes if patient is constipated).
8. **IV Fluids:** D5W TKO
9. **Special Medications:**

Empiric Therapy for Adults without Gonorrhea contact:

-Nafcillin or Oxacillin 2 gm IV q4h **AND**

Gentamicin 100-120 mg (1.5-2 mg/kg) IV, then 80 mg IV q8h (3-5 mg/kg/d) **OR**

-Vancomycin 1 gm q12h (1 gm in 250 cc D5W over 60 min) and Gentamicin as above **OR**

-Ticarcillin/clavulanate (Timentin) 3.1 gms IV q4-6h **OR**

-Ampicillin/Sulbactam (Unasyn) 1.5-3.0 gm IV q6h **OR**

-Ceftriaxone 1.0 gm IV pb q2h **OR**

-Cefotaxime 1.0 gm IV pb q8h **OR**

-Ceftizoxime 1.0 gm IV q8h until symptoms resolve **THEN**

-Ceftizoxime Axetil (Ceftin) 500 mg PO bid x 7 days **OR**

-Amoxicillin 500 mg 1.0 tid **AND**

-Probenecid 1 gm/d PO bid x 7 days **OR**

-Ciprofloxacin 500 mg PO bid x 7 days.

-Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h.

Empiric Therapy for Adults with possible Gonorrhea:

-Ceftriaxone (Rocephin) 1-2 gm IV q12h (max 4 gm/d) **OR**

-Ceftizoxime (Ceftizox) 1-2 gm IV q8h.

-Ciprofloxacin (Cipro) 400 mg IV q12h.

10. Symptomatic Medications:

-Acetaminophen & codeine (Tylenol 3) 1-2 PO q4-6h prn pain.

-Heparin 5000 U SQ bid.

11. Extras: X-ray views of joint (AP and lateral), CXR, ECG. Culture. PPD. Physical therapy consult for exercise program.

12. Labs: CBC, SMA 7&12, blood C&S x 2, VDRL. UA. Cultures of urethra, cervix, urine, throat, sputum, skin, rectum. Antibiotic levels. Blood cultures x 2 (chocolate agar).

Synovial fluid:

Tube 1 - Glucose, protein, lactate, pH.

Tube 2 - Gram stain, C&S, fungal, AFB.

Tube 3 - Cell count.

13. Other Orders and Meds:

Septic Shock

1. Admit to:

2. Diagnosis: Sepsis

3. Condition:

4. Vital signs: q1h; Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; urine output < 25 cc/hr for 4h O2 saturation <90%.

5. Activity: Bed rest.

6. **Nursing:** I&O, pulse oximeter. Foley catheter to closed drainage.
7. **Diet:** NPO
8. **IV Fluids:** 2 liters of normal saline over 2 hours, then D5 1/2 NS at 125 cc/h
9. **Special Medications:**
 - Oxygen at 2-5 L/min by NC or mask.

Antibiotic Therapy

- A. For initial treatment of life-threatening sepsis in adults, a third-generation cephalosporin (cefotaxime, ceftizoxime or ceftriaxone), ticarcillin/clavulanic acid or imipenem, each with an aminoglycoside (gentamicin, tobramycin or amikacin) is recommended.
- B. **For intra-abdominal or pelvic infections** likely to involve anaerobes, treatment should include either ticarcillin/clavulanic acid, ampicillin/sulbactam, piperacillin/tazobactam, imipenem, cefoxitin or cefotetan, each with an aminoglycoside or, alternatively, metronidazole or clindamycin, together with an aminoglycoside.

C. Antibiotics Used in Sepsis

- Cefotaxime (Claforan) 2 gm q4-6h.
- Ceftizoxime (Cefizox) 1-2 gm IV q8h.
- Ceftriaxone (Rocephin) 1-2 gm IV q12h (max 4 gm/d).
- Cefoxitin (Mefoxin) 1-2 gms q6-8h.
- Cefotetan (Cefotan) 1-2 gms IV q12h.
- Ceftazidime (Fortaz) 1-2 g IV q8h.
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q4-6h (200-300 mg/kg/d).
- Ampicillin/Sulbactam (Unasyn) 1.5-3.0 gm IV q6h.
- Piperacillin/tazobactam (Zosyn) 3.375-4.5 gm IV q6h.
- Piperacillin, ticarcillin, mezlocillin 3 gms IV q4-6h.

- Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h (with gent/tobramycin).
- Gentamicin, tobramycin 5 mg/kg IV qd; or 100-120 mg (1.5-2 mg/kg) IV, then 80 mg IV q8h (3-5 mg/kg/d).
- Amikacin (Amikin) 5.0 mg/kg IV loading dose; then 5 mg/kg IV q8h.
- Vancomycin 500 mg IV q6h, or 1 gm IV q12h.
- Ciprofloxacin (Cipro) 400 mg IV q12h.
- Aztreonam (Azactam) 1-2 gm IV q6-8h; max 8 g/day.
- Metronidazole 500 mg (7.5 mg/kg) IV q6h.
- Clindamycin 600-900 IV q8h (15-30 mg/kg/d).

Nosocomial sepsis with IV catheter or IV drug abuse

- Vancomycin 1 gm q12h (1 gm in 250 cc D5W over 60 min);

AND

Gentamicin or Tobramycin as above; **AND EITHER**

Ceftazidime or Ceftizoxime 1-2 gms IV q8h **OR**

Piperacillin, ticarcillin or mezlocillin 3 gm IV q4-6h.

Blood Pressure Support

- Dopamine 4-20 mcg/kg/min (200 mg in 250 cc D5W, 800 mcg/mL).
- Albumin 25 gm IV (100 mL of 25% sln) **OR**
- Hetastarch (Hespan) 500-1000 cc over 30-60 min (max 1500 cc/d).
- Dobutamine 5 mcg/kg/min, and titrate up to max 15 mcg/kg/min.

Candida Septicemia:

- Amphotericin B, 1 mg test dose (D5W 100 mLs 60 min), then 10-20 mg (D5W 250 mLs over 3-4h) the same day, then 0.4-0.5 mg/kg/day (D5W 250-500 mLs over 4-6h); total dose 0.5-1.0 gm. Acetaminophen, diphenhydramine prior to amphotericin, and meperidine (Demerol) 25-50 mg IV prn chills during Amphotericin B infusion.

10. Symptomatic Medications:

-Acetaminophen 650 mg PR/PO q4-6h prn temp >101.

-Ranitidine (Zantac) 50 mg IV q8h or 150 mg PO bid.

11. Extras: CXR, KUB, sinus films, ECG. Indium/Gallium scan, ultrasound, lumbar puncture. Cardiology, critical care consult.

12. Labs: CBC with differential, SMA 7 & 12, blood C&S x 3, T&C for 3-6 Units PRBC, INR/PTT, drugs levels peak & trough at 3rd dose. UA. Cultures of urine, sputum, wound, IV catheters, ascitic fluid, decubitus ulcers, pleural fluid.

13. Other Orders and Meds:

Peritonitis

1. **Admit to:**
2. **Diagnosis:** Peritonitis
3. **Condition:**
4. **Vital signs:** q1-6h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C.
5. **Activity:** Bed rest.
6. **Nursing:** Guaiac stools.
7. **Diet:** NPO
8. **IV Fluids:** D5 1/2 NS at 125 cc/h
9. **Special Medications:**

Spontaneous Bacterial Peritonitis (nephrotic or cirrhotic):

Option 1:

- Ampicillin 1-2 gms IV q 4-6h; (vancomycin 500 mg IV q6h or 1 gm IV q12h if penicillin allergic) **AND EITHER**
- Cefotaxime (Claforan) 1-2 gm IV q4-6h **OR**
- Ceftizoxime (Cefizox) 1-2 gms IV q8h **OR**
- Gentamicin or Tobramycin 1.5 mg/kg IV, then 1 mg/kg q8h (adjust for renal function).

Option 2:

- Ticarcillin/clavulanate (Timentin) 3.1 gms IV q6h.

Option 3:

- Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6h.

Secondary Bacterial Peritonitis:

Option 1:

- Ampicillin 1-2 gm IV q4-6h **AND**
- Gentamicin or tobramycin (aminoglycosides are not recommended in patients with cirrhosis) 100-120 mg (1.5

mg/kg); then 80 mg IV q8h (5 mg/kg/d)(if resistant, use amikacin) **AND**

Metronidazole 500 mg IV q6h (15-30 mg/kg/d) **OR**

Cefoxitin 1-2 gm IV q6h **OR**

Cefotetan 1-2 gm IV q12h.

Option 2:

-Ticarcillin/clavulanic acid (Timentin) 3.1 gm IV q4-6h (200-300 mg/kg/d) with aminoglycoside as above.

Option 3:

-Ampicillin/sulbactam (Unasyn) 1.5-3.0 gm IV q6h with aminoglycoside as above.

Option 4:

-Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h.

Fungal:

-Amphotericin B (2 mg/L 1st 24 hours then 1.5 mg/L) **OR**

-Fluconazole (Diflucan) 200 mg PO x 1, then 100 mg PO qd

AND

Flucytosine 2 gm PO x 1, then 1 gm PO qd.

10. Symptomatic Meds:

-Ranitidine (Zantac) 50 mg IV q8h or 150 mg PO bid.

-Acetaminophen 325 mg PO/PR q4-6h prn temp >101.

11. Extras: Plain film, upright abdomen, lateral decubitus, CXR PA & LAT; stat surgery consult for secondary bacterial peritonitis; ECG, abdominal ultrasound. CT scan.

12. Labs: CBC with differential, SMA 7 & 12, amylase, lactate. INR/PTT, UA with micro, C&S; drugs levels peak & trough 3rd dose.

Paracentesis

TUBE 1 - Cell count & differential (1-2 mL, EDTA purple top tube)

TUBE 2 - Gram stain of sediment; inject 10-20 mL into anaerobic & aerobic culture bottle; AFB, fungal C&S (3-4 mL).

TUBE 3 - Glucose, protein, albumin, LDH, triglycerides, specific gravity, bilirubin, amylase (2-3 mL, red top tube).

SYRINGE - pH, lactate (3 mL).

13. Other Orders and Meds:

Diverticulitis

1. **Admit to:**

2. **Diagnosis:** Diverticulitis

3. **Condition:**

4. **Vital signs:** qid; Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C

5. **Activity:** Up ad lib in room.

6. **Nursing:** Daily weights, I&O. Guaiac all stools.

7. **Diet:** NPO. Advance to clear liquids in morning as tolerated.

8. **IV Fluids:** 0.5-2 L NS over 1-2 hr then, D5 1/2 NS at 125 cc/hr. NG tube at low intermittent suction (if obstructed).

9. **Special Medications:**

Regimen 1:

-Gentamicin or tobramycin 100-120 mg IV (1.5-2 mg/kg), then 80 mg IV tid (5 mg/kg/d) **AND EITHER**

Cefoxitin (Mefoxin) 2 gm IV q6-8h **OR**

Clindamycin (Cleocin) 600-900 mg IV q8h.

Regimen 2:

-Metronidazole 1 g (15 mg/kg) IV then 500 mg q6-8h (15-30 mg/kg/d) **AND**

Ciprofloxacin (Cipro) 250-500 mg PO bid or 200-300 mg IV q12h

Outpatient Regimen:

-Trimethoprim/SMX (Bactrim DS) 1 double strength tab PO bid **AND**

metronidazole 250-500 mg PO q6h **OR**

-Ciprofloxacin (Cipro) 250-500 mg PO bid.

10. Symptomatic Medications:

-Ranitidine (Zantac) 50 mg IV q8h or 150 mg PO bid.

-Meperidine 50-100 mg IM or IV q3-4h prn pain.

-Zolpidem (Ambien) 5-10 mg qhs, use 5 mg for elderly

11. Extras: Acute abdomen series, CXR PA & LAT, ECG, CT scan of abdomen, ultrasound, surgery and GI consults.

12. Labs: CBC with differential, SMA 7 & 12, amylase, lipase, blood cultures x 2, drug levels peak & trough 3rd dose. UA, C&S. Dipstick urine for blood.

13. Other Orders and Meds:

Lower Urinary Tract Infection

1. **Admit to:**

2. **Diagnosis:** UTI

3. **Condition:**

4. **Vital signs:** tid; Call physician if BP <90/60; >160/90; R >30, <10; P >120, <50; T >38.5°C

5. **Activity:**

6. **Nursing:**

7. **Diet:** Regular

8. **IV Fluids:**

9. **Special Medications:**

Lower Urinary Tract Infection:

-Treat for three to seven days.

-Trimethoprim-sulfamethoxazole (Septra) 1 double strength tab (160/800 mg) PO bid

-Norfloxacin (Noroxin) 400 mg PO bid

-Ciprofloxacin (Cipro) 250 mg PO bid

-Ofloxacin (Floxin) 400 mg PO bid

-Lomefloxacin (Maxaquin) 400 mg PO qd

-Enoxacin (Penetrex) 200-400 mg PO q12h; 1h before or 2h after meals

-Cefadroxil (Duricef) 500 mg PO bid

-Nitrofurantoin (Macrobid) 100 mg PO qid or Macrobid 100 mg PO bid

-Amoxicillin/clavulanate (Augmentin) 250 mg PO tid

-Amoxicillin 500 mg PO tid

-Cephalothin (Keflex) 500 mg PO q6h

-Cefixime (Suprax) 200 mg PO q12h or 400 mg PO qd **OR**

-Cefazolin (Ancef) 1-2 gm IV q8h.

Complicated or Catheter Associated Urinary Tract Infection:

Ceftizoxime (Cefizox) 1 gm IV q8h. **OR**

Ceftriaxone (Rocephin) 0.5-1 gm IV q12h **OR**

Gentamicin 100-120 mg IV (1.5-2 mg/kg); then 80 mg IV q8h (1.5/kg q8-12h) **OR**

-Ticarcillin/clavulanic acid (Timentin) 3.1 gm IV q4-6h

-Ciprofloxacin or Norfloxacin (see above).

Prophylaxis (≥ 3 episodes/yr):

-Trimethoprim/SMX 1/2 single strength tab PO qd (after eradication of infection).

Candida Cystitis

-Fluconazole (Diflucan) 100 mg PO or IV x 1 dose, then 50 mg PO or IV qd for 5 days **OR**

-Amphotericin B continuous bladder irrigation, 50 mg/1000 mL sterile water (50 mcg/mL) via 3-way Foley catheter at 1 L/d for 5 days.

10. Symptomatic Medications:

-Phenazopyridine (Pyridium) 100 mg PO tid.

11. Extras: Renal ultrasound, IVP.

12. Labs: CBC, SMA 7. UA with micro, urine Gram stain, C&S.

13. Other Orders and Meds:

Pyelonephritis

1. Admit to:

2. Diagnosis: Pyelonephritis

3. Condition:

4. Vital signs: tid; Call physician if BP <90/60; >160/90; R >30, <10; P >120, <50; T >38.5°C

5. Activity:

6. Nursing: I&O.

7. Diet: Regular

8. IV Fluids: D5 1/2 NS at 100 cc/h.

9. Special Medications:

-In more severely ill patients, treatment with an IV third-generation cephalosporin, ticarcillin/clavulanic acid, piperacillin/tazobactam or imipenem is recommended, sometimes together with an aminoglycoside, especially if urosepsis is present.

-Trimethoprim-sulfamethoxazole (Septra) 1 double strength tab (160/800 mg) PO bid or 10 mLs in 100 mLs D5W IV over two hours q12h

-Ciprofloxacin (Cipro) 250-500 mg PO bid or 200-400 mg IV q12h

-Norfloxacin (Noroxin) 400 mg PO bid

-Ofloxacin (Floxin) 400 mg PO or IV bid

-Lomefloxacin (Maxaquin) 400 mg PO qd

-Enoxacin (Penetrex) 200-400 mg PO q12h; 1h before or 2h after meals

-Cefadroxil (Duricef) 500 mg PO bid

-Nitrofurantoin (Macrobid) 100 mg PO qid or Macrobid 100 mg PO bid

-Amoxicillin 500 mg PO tid

- Amoxicillin/clavulanate (Augmentin) 500 mg tab PO tid
- Ceftizoxime (Cefizox) 1 gm IV q8h.
- Ceftazidime (Fortaz) 1 gm IV q8h.
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q6h
- Piperacillin/tazobactam (Zosyn) 3.375-4.5 gm IV/PB q6h
- Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h.
- Gentamicin or tobramycin - loading dose of 100-120 mg IV (1.5-2 mg/kg); then 80 mg IV q8h (2-5 mg/kg/d).
- Ampicillin 1 gm IV q4-6h
- Parenteral therapy should be continued for 24 hours after afebrile; oral agents should be taken to complete a 10-14 day course.

10. Symptomatic Medications:

- Phenazopyridine (Pyridium) 100 mg PO tid.
- Meperidine (Demerol) 50-100 mg IM q4-6h prn pain.

11. Extras: Renal ultrasound, IVP, KUB.

12. Labs: CBC with differential, SMA 7. UA with micro, urine Gram stain, C&S; blood C&S x 2. Drug levels peak & trough at 3rd or 4th dose.

13. Other Orders and Meds:

Osteomyelitis

- 1. Admit to:**
- 2. Diagnosis:** Osteomyelitis
- 3. Condition:**
- 4. Vital signs:** qid; call physician if BP <90/60; T >38.5°C
- 5. Activity:**
- 6. Nursing:** Keep involved extremity elevated. Encourage range of motion exercises of upper and lower extremities tid.

7. Diet: Regular, high fiber.

8. IV Fluids: Hep-lock with flush q shift.

9. Special Medications:

Adult Empiric Therapy (staph a, gram neg, strep):

-Nafcillin or Oxacillin 2 gm IV q4h **OR**

-Cefazolin (Ancef) 1-2 gm IV q8h **OR**

-Vancomycin 1 gm q12h (1 gm in 250 cc D5W over 1h)

-**Add** 3rd generation cephalosporin if gram negative bacilli on Gram stain. Treat for 4-6 weeks

Post Operative or Post Trauma (staph aureus, gram neg, Pseudomonas):

-Vancomycin 1 gm q12h **AND** Ceftazidime (Fortaz) 1-2 gm IV q8h.

-Imipenem/cilastatin (Primaxin)(**single drug Tx**) 0.5-1.0 gm IV q6-8h.

-Ticarcillin/clavulanic acid (Timentin)(**single drug Tx**) 3.1 gm IV q4-6h (200-300 mg/kg/d).

-Ciprofloxacin (Cipro) 500 mg PO bid or 200-300 mg IV q12h **AND**

Rifampin 600 mg PO qd.

-Treat for 4-6 weeks.

Osteomyelitis with Decubitus Ulcer:

-Cefoxitin (Mefoxin), see above.

-Ciprofloxacin (Cipro) and clindamycin or metronidazole.

-Imipenem/cilastatin (Primaxin), see above.

-Nafcillin, gentamicin and clindamycin; see above.

-Treat for 4-6 weeks.

10. Symptomatic Medications:

-Meperidine 50-100 mg IM q3-4h prn pain.

-Docusate sodium (Colace) 100-200 mg PO qhs.

-Heparin 5000 U SQ bid.

11. Extras: Technetium/Gallium bone scans, multiple X-ray views, CT/MRI.

12. Labs: CBC with differential, SMA 7, blood C&S x 3, MIC, MBC, UA with micro, C&S. Needle biopsy of bone for C&S and fungi; antibiotic levels peak & trough at 3rd dose. Urine culture.

13. Other Orders and Meds:

Active Pulmonary Tuberculosis

1. Admit to:

2. Diagnosis: Active Pulmonary Tuberculosis

3. Condition:

4. Vital signs: q shift

5. Activity: Up ad lib in room.

6. Nursing: Respiratory isolation for 1-2 weeks after starting treatment.

7. Diet: Regular

8. Special Medications:

-Isoniazid 300 mg PO qd (5 mg/kg/d, max 300 mg/d) for 6 months **AND**

Rifampin 600 mg PO qd (10 mg/kg/d, 600 mg/d max) for 6 months **AND**

Pyrazinamide 1.5-2.5 gm (15-30 mg/kg/d, max 2.5 gm) PO qd in 3 divided doses for 6 months

-If resistance to INH is likely, add Ethambutol 1.5 gm (25 mg/kg/d, 2.5 gm/d max) PO qd

-The regimen of isoniazid, rifampin, and pyrazinamide for 2 months, then isoniazid and rifampin for 4 months is also effective if a resistant organism is not suspected.

Prophylaxis

-Isoniazid 300 mg PO qd (5 mg/kg/d) x 6 months (12 months if HIV positive).

9. Extras: CXR PA, LAT, ECG.

10. Labs: CBC with differential, SMA7 & 12, LFT's, HIV serology. First AM sputum for AFB x 3 samples. UA with micro, C&S.

11. Other Orders and Meds:

Cellulitis

1. Admit to:

2. Diagnosis: Cellulitis

3. Condition:

4. Vital signs: tid; Call physician if BP <90/60; T >38.5°C

5. Activity: Up ad lib.

6. Nursing: Keep affected extremity elevated; warm compresses prn.

7. Diet: Regular, encourage fluids.

8. IV Fluids: Hep lock with flush q shift.

9. Special Medications:

Empiric Therapy Cellulitis

-Nafcillin or Oxacillin 1-2 gm IV q4-6h **OR**

-Cefazolin (Ancef) 1-2 gm IV q8h **OR**

-Vancomycin 1 gm q12h (1 gm in 250 cc D5W over 1h) **OR**

-Erythromycin 500 IV/PO q6h **OR**

-Dicloxacillin 250-500 mg PO qid (in mild disease or after improvement on IV therapy); may add penicillin VK to enhance coverage for streptococcus.

Immunosuppressed, Diabetic Patients, or Ulcerated Lesions:

-Use nafcillin or cefazolin + (gent or aztreonam + clindamycin or metronidazole if septic) **OR** Timentin **OR** Imipenem **OR** Cipro + clindamycin or metronidazole.

-Nafcillin or oxacillin 1-2 gm IV q4-6h.

-Cefazolin (Ancef) 1-2 gm IV q8h.

-Cefoxitin (Mefoxin) 1-2 gm IV q6-8h.

If Septic: Add gentamicin 100-120 mg IV (1.5-3 mg/kg), then 80 mg IV q8h (3-5 mg/kg/d) **OR** Aztreonam (Azactam) 1-2 gm IV q6-8h **PLUS**

-Clindamycin (Cleocin) 600-900 mg IV q8h or 450 mg PO qid **OR**

-Metronidazole (Flagyl) 500 mg IV/PO q6h.

-Ticarcillin/clavulanic acid (Timentin) (**single drug Tx**) 3.1 gm IV q4-6h (200-300 mg/kg/d).

-Ampicillin/Sulbactam (Unasyn)(**single drug therapy**) 1.5-3.0 gm IV q6h.

-Imipenem/cilastatin (Primaxin)(**single drug therapy**) 0.5-1 mg IV q6-8h **OR**

-Ciprofloxacin (Cipro) 250-500 mg PO bid or 200-300 mg IV q12h **AND**

Clindamycin 250-500 mg PO bid or 600-900 mg IV q8h (or metronidazole).

10. Symptomatic Medications:

-Silver sulfadiazine or ½ strength Dakin's sln wet to dry dressings tid. 1:1000 Betadine soaks qd.

-Acetaminophen/codeine (Tylenol #3) PO q4h prn pain.

11. Extras: Technetium/Gallium scans, Doppler analysis (ankle-brachial indices), impedance plethysmography.

12. Labs: CBC, SMA 7, blood C&S x 2. Leading edge aspirate, swab, drainage fluid for Gram stain, C&S; UA, antibiotic levels.

13. Other Orders and Meds:

Pelvic Inflammatory Disease

1. **Admit to:**

2. **Diagnosis:** Pelvic Inflammatory Disease

3. **Condition:**

4. **Vital signs:** q4h x 24h then qid; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C

5. **Activity:**

6. **Nursing:** I&O.

7. **Diet:** Regular

8. **IV Fluids:** D5 1/2 NS at 100 cc/hr.

9. **Special Medications:**

-Cefoxitin (Mefoxin) 2 gm IV q6h **OR** Cefotetan (Cefotan) 1-2 gms IV q12h; **AND** Doxycycline (Vibramycin) 100 mg IV q12h (IV for 4 days & 48h after afebrile, then complete 10-14 days of Doxycycline 100 mg PO bid) **OR**

-Clindamycin 900 mg IV q8h **AND** Gentamicin 100-120 mg (2 mg/kg), then 100 mg (1.5 mg/kg) IV q8h, then complete 10-14 d of Clindamycin 450 mg PO qid or Doxycycline 100 mg PO bid **OR**

-Ceftriaxone 250 mg IM x 1 and Doxycycline 100 mg PO bid x 14 days. **OR**

-Ofloxacin 300 mg PO bid x 14 days **AND EITHER**
Clindamycin 300 mg PO qid x 14 days **OR**

Metronidazole 500 mg PO bid x 14 days.

10. **Symptomatic Medications:**

-Acetaminophen (Tylenol) 325 mg 1-2 tabs PO q4-6h prn pain or temp >101.

-Meperidine (Demerol) 25-100 mg IM q4-6h prn pain.

-Zolpidem (Ambien) 10 mg PO qhs.

11. Labs: CBC, SMA 7 & 12, ESR. GC & chlamydia culture. UA with micro, C&S, VDRL, HIV; blood cultures x 2. Pelvic ultrasound.

12. Other Orders and Meds:

Gastroenterology

Peptic Ulcer Disease

1. Admit to:

2. Diagnosis: Peptic ulcer disease.

3. Condition:

4. Vital Signs: qid, postural BP; Call physician if BP systolic >160, <90; diastolic. >90, <60; P >120, <50; T >38.5°C

5. Activity: Up ad lib

6. Nursing: Guaiac all stools.

7. Diet: NPO 48h, then regular, no caffeine.

8. IV Fluids: D5 1/2 NS with 20 mEq KCL at 125 cc/h. NG tube at low intermittent suction (if obstructed).

9. Special Medications:

-Ranitidine (Zantac) 50 mg IV bolus, then continuous infusion at 6.25-12.5 mg/h (150-300 mg in 500 mL D5W at 21 mL/h over 24h) or 50 mg IV q8h, or 150 mg PO bid or 300 mg PO qhs **OR**

-Cimetidine (Tagamet) 300 mg IV bolus, then continuous infusion at 37.5-50 mg/h (900 mg in 500 mL D5W over 24h) or 300 mg IV q6-8h, or 400 mg PO bid or 800 mg PO qhs **OR**

-Famotidine (Pepcid) 20 mg IV q12h or 20 mg PO bid or 40 mg PO qhs **OR**

-Nizatidine (Axid) 300 mg PO qhs or 150 mg PO bid **OR**

-Omeprazole (Prilosec) 20 mg PO bid (30 minutes prior to meals) **OR**

-Lansoprazole (Prevacid) 15-30 mg PO qd prior to breakfast [15, 30 mg caps].

Eradication of H pylori:

Option 1:

-Bismuth subsalicylate (Pepto-Bismol) 2 tabs or 30 mLs PO qid **and** metronidazole (Flagyl) 250 mg PO qid **and** tetracycline 500 mg qid. Treat for 14 days.

Option 2:

-Bismuth subsalicylate (Pepto-Bismol) 2 tabs or 30 mLs PO qid **and** metronidazole (Flagyl) 250 mg PO qid **and** amoxicillin 500 mg qid. Treat for 14 days.

Option 3:

-Bismuth subsalicylate (Pepto-Bismol) 2 tabs or 30 mLs PO qid **and** clarithromycin (Biaxin) 250-500 mg PO bid **and** amoxicillin 500 mg qid. Treat for 14 days.

10. Symptomatic Medications:

-Trimethobenzamide (Tigan) 100-250 mg PO or 100-200 mg IM/PR q6h prn nausea **OR**

-Prochlorperazine (Compazine) 5-10 mg IM/IV/PO q4-6h, or 25 mg PR q4-6h prn nausea.

-Meperidine (Demerol) 50-100 mg IM/IV q3-4h prn pain

11. Extras: Upright abdomen, KUB, CXR, ECG, endoscopy. GI consult. Surgery consult.

12. Labs: CBC, SMA 7 & 12, amylase, lipase, LDH. UA, Helicobacter pylori IgG, Salicylate level. Fasting serum gastrin qAM x 3 day (hypersecretory syndrome)

13. Other Orders and Meds:

Gastrointestinal Bleeding

1. Admit to:

2. Diagnosis: Upper/lower GI bleed

3. Condition:

4. Vital signs: q30min; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; urine output <15 mL/hr for 4h.

5. Activity: Bed rest

6. Nursing: Place nasogastric tube, then lavage with 2 L of room temperature normal saline, then connect to low intermittent suction, repeat lavage q1h. Record volume & character of lavage. Remove NG tube when there is no evidence of continued bleeding. Foley to closed drainage; I&O. Record stool character.

7. Diet: NPO

8. IV Fluids: Two 16 gauge IV lines. 3 L NS over 1-4h; when available, transfuse 2-6 units PRBC run as fast as possible, then call physician for further orders.

9. Special Medications:

-Oxygen 2 L by NC.

-Ranitidine (Zantac) 50 mg IV bolus, then continuous infusion at 6.25-12.5 mg/h [150-300 mg in 500 mL D5W over 24h (21 cc/h)], or 50 mg IV q6-8h **OR**

-Cimetidine (Tagamet) 300 mg IV bolus, then continuous infusion at 37.5-50 mg/h (900 mg in 500 cc D5W over 24h), or 300 mg IV q6-8h **OR**

-Famotidine (Pepcid) 20 mg IV q12h.

Suspected Esophageal Variceal Bleeds:

Option 1:

- Vasopressin (Pitressin) 20 U IV over 20-30 minutes, then 0.2-0.3 U/min [100 U in 250 mL of D5W (0.4 U/mL)], for 30 min, followed by increases of 0.2 U/min until bleeding stops or max of 0.9 U/min. If bleeding stops, taper over 24-48h **AND**
- Nitropaste (with vasopressin) 1 inch q6h **OR** nitroglycerin IV at 10-30 mcg/min continuous infusion (50 mg in 250 mLs D5W).

Option 2:

- Somatostatin (Octreotide) 50 mcg IV bolus followed by 25-50 mcg/h IV infusion.
- Vitamin K (Phytonadione) 10 mg IV/SQ qd for 3 days (only if INR is elevated).
- Fresh frozen plasma 2-4 U IV (for severe coagulopathies or after transfusion of 6 U PRBC).

10. Extras: Potable CXR, upright abdomen, ECG. Surgery & GI consults.

Upper GI Bleeds: Esophagogastroduodenoscopy with possible coagulation or sclerotherapy; Sengstaken-Blakemore or Minnesota tube for tamponade for esophageal varices.

Lower GI Bleeds: Sigmoidoscopy/colonoscopy (after a GoLytely purge 6-8 L over 4-6h), technetium 99m RBC scan, angiography with possible embolization.

11. Labs: Repeat spun hematocrit q2h with CBC with platelets q12-24h. Repeat PT in 6 hours. SMA 7 & 12, ALT, AST, alkaline phosphatase, salicylate level, INR/PTT, type and cross for 3-6 U PRBC & 2-4 U FFP.

12. Other Orders and Meds:

Cirrhotic Ascites and Edema

1. **Admit to:**

2. **Diagnosis:** Cirrhotic ascites & edema

3. **Condition:**

4. **Vital signs:** Vitals q4-6 hours; Call physician if BP >160/90, <90/60; P >120, <50; T >38.5°C; urine output < 25 cc/hr x 4h, or abnormal mental status.

5. **Activity:** Bed rest with legs elevated.

6. **Nursing:** I&O, daily weights, measure abdominal girth qd, guaiac all stools. No sedatives unless withdrawal signs appear.

7. **Diet:** 2500 calories, 100 gm protein; 500 mg sodium restriction; fluid restriction to 1-1.5 L/d (if hyponatremia, Na <130).

8. **IV Fluids:** Hep-lock with flush q shift.

9. **Special Medications:**

-Diurese to reduce weight by 0.5-1 kg/d (if edema) or 0.25 kg/d (if no edema).

-Spironolactone (Aldactone) 25-50 mg PO qid or 200 mg PO qAM, increase by 100 mg/d to max of 400 mg/d.

-Furosemide (Lasix)(ascites refractory to above) 40-120 mg PO or IV qd-bid. Add KCL 20-40 mEq PO qAM.

-Metolazone (Zaroxolyn) 5-20 mg PO qd.

-Ranitidine (Zantac) 150 mg PO bid.

-Vitamin K 10 mg SQ qd x 3d.

-Folic acid 1 mg PO qd.

-Thiamine 100 mg PO qd.

-Multivitamin PO qd.

Paracentesis: Remove up to 5 L ascites if peripheral edema, tense ascites, or decreased diaphragmatic excursion. If

large volume paracentesis without peripheral edema or with renal insufficiency, give salt-poor albumin 12.5 gm for each 2 liters of fluid removed (50 mL of 25% solution); infuse 25 mL before paracentesis and 25 mL 6h after.

Also see Hepatic Encephalopathy, page 88.

10. Symptomatic Medications:

-Docusate sodium (Colace) 100-200 mg PO qhs.

11. Extras: KUB, CXR, abdominal ultrasound, liver-spleen scan, GI consult.

12. Labs: Ammonia, CBC, SMA 7 & 12, LFT's, albumin, LDH, GGT, amylase, lipase, blood C&S, INR/PTT, blood alcohol. Urine creatinine, Na, K. HBsAg, anti-HBsAg/IgG, Hepatitis C virus antibody, alpha-1-antitrypsin.

Ascitic Fluid

Tube 1 - Protein, albumin, specific gravity, glucose, bilirubin, amylase, lipase, triglyceride, LDH (3-5 mL, red top tube).

Tube 2 - Cell count & differential (3-5 mL, purple top tube).

Tube 3 - C&S, Gram stain, AFB, fungal (5-20 mL); inject 20 mL into blood culture bottles at bedside.

Tube 4 - Cytology (>20 mL).

Syringe - pH (2 mL).

Concomitant serum albumin, LDH, total protein, glucose.

13. Other Orders and Meds:

Viral Hepatitis

1. Admit to:

2. Diagnosis: Hepatitis

3. Condition:

4. Vital signs: qid; Call physician if BP <90/60; T >38.5°C

5. Activity:

6. Nursing: Stool isolation, guaiac all stools.

7. Diet: Clear liquid (if nausea), low fat (if diarrhea).

8. Special Medications:

-Ranitidine (Zantac) 150 mg PO bid or 150 mg in 250 D5W to run over 24 hours.

-Vitamin K 10 mg SQ qd x 3d.

-Multivitamin PO qd.

9. Symptomatic Meds:

-Meperidine (Demerol) 25-100 mg IM q4-6h prn pain.

-Trimethobenzamide (Tigan) 250 mg PO q6-8h prn pruritis or 200 mg rectal suppository q6-8h prn.

-Hydroxyzine (Vistaril) 25 mg IM/PO q4-6h prn nausea or pruritus.

-Diphenhydramine (Benadryl) 25-50 mg PO/IV q4-6h prn pruritus.

10. Extras: Liver/spleen scan, ultrasound, GI consult.

11. Labs: CBC, SMA 7 & 12, GGT, LDH, 5'-nucleotidase, amylase, lipase, INR/PTT; acetaminophen level, anti-HA IgM, HBsAg, hepatitis C virus antibody, HBcAg, HBeAg, hepatitis core antibody, anti-HBe, anti-HBs, HDV-RNA, anti-delta (IgM/IgG); alpha 1 antitrypsin level (with phenotype). ANA. Ferritin, serum iron, TIBC, ceruloplasmin; urine copper.

12. Other Orders and Meds:

Cholecystitis

1. **Admit to:**

2. **Diagnosis:** Cholecystitis

3. **Condition:**

4. **Vital signs:** q4h; call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C

5. **Activity:** Bed rest with bedside commode.

6. **Nursing:** Daily weights, I&O.

7. **Diet:** NPO

8. **IV Fluids:** 0.5-2 L LR over 1-2h then D5 1/2 NS with 20 mEq KCL/L at 125 cc/hr.

9. **Special Medications:**

-Metronidazole 1.0 gm (15 mg/kg) over 1h, then 500 mg (7.5 mg/kg) IV q6h **AND EITHER**

Mezlocillin, Ticarcillin or Piperacillin 3 gm IV q4-6h **OR**

Cefoxitin (Mefoxin) 1-2 gm IV q6-8h **OR**

Cefotetan (Cefotan) 1-2 gm IV q12h.

-Imipenem Cilastatin 0.5-1.0 gm IV q6h (single drug treatment).

-Ampicillin/Sulbactam (Unasyn)(**single drug Tx**) 1.5-3 gm IV q6h.

-Ticarcillin/Clavulanate (Timentin) (**single drug Tx**) 3.1 g IV q4-6h. In seriously ill patient consider adding aminoglycoside.

10. **Symptomatic Medications:**

-Meperidine 50-100 mg IM q4-6h and Hydroxyzine (Vistaril) 25-50 mg IM q4h prn pain.

-Hydroxyzine (Vistaril) 25-50 mg IM q4-6h prn pain.

- 11. Extras:** Right upper abdomen ultrasound (after 8 hour fast), HIDA scan, CXR PA & LAT, KUB, ECG. Surgical consult.
 - 12. Labs:** CBC, SMA 7 & 12, GGT, amylase, lipase, INR/PTT, hepatitis panel, type & cross match for 2 units PRBC. UA.
 - 13. Other Orders and Meds:**
-

Bacterial Cholangitis and Biliary Sepsis

- 1. Admit to:**
- 2. Diagnosis:** Bacterial cholangitis
- 3. Condition:**
- 4. Vital signs:** q1-6h; Call physician if BP systolic >160, <90; diastolic. >90, <60; P >120, <50; R>25, <10; T >38.5°C
- 5. Activity:** Bed rest
- 6. Nursing:** I&O
- 7. Diet:** NPO
- 8. IV Fluids:** 0.5-3 L LR over 1-3h, then D5 1/2 NS with 20 mEq KCL/L at 125 cc/h. NG tube at low constant suction. Foley to closed drainage.
- 9. Special Medications:**
 - Mezlocillin, Ticarcillin or Piperacillin 3 gm IV q4-6h **AND** Metronidazole (Flagyl) 500 mg (7.5 mg/kg) IV q6h.
 - Cefoxitin (Mefoxin) 1-2 gm IV q6-8h (with gentamicin).
 - Ticarcillin/clavulanate (Timentin) 3.1 g IV q4-6h.
 - Ampicillin 1-2 gm IV q4-6h. **AND** Gentamicin 100 mg (1.5-2 mg/kg), then 80 mg IV q8h (3-5 mg/kg/d) **AND** Metronidazole 500 mg (7.5 mg/kg) IV q6h .
- 10. Symptomatic Medications:**

-Meperidine (Demerol) 25-100 mg IM q4-6h prn pain.

-Hydroxyzine (Vistiril) 25-50 mg IV q4-6h prn pain.

11. Extras: CXR, ECG, RUQ & ultrasound, HIDA scan, acute abdomen series. GI consult, surgical consult.

12. Labs: CBC, SMA 7 & 12, GGT, amylase, lipase, blood C&S x 2. UA, INR/PTT.

13. Other Orders and Meds:

Acute Pancreatitis

1. Admit to:

2. Diagnosis: Acute pancreatitis

3. Condition:

4. Vital signs: q1-4h, call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; urine output < 25 cc/hr.

5. Activity: Bed rest with bedside commode.

6. Nursing: Daily weights, I&O, fingerstick glucose qid, guaiac stools.

7. Diet: NPO

8. IV Fluids: 1-4 L NS over 1-3h, then D5 1/2 NS with 20 mEq KCL/L at 125 cc/hr. NG tube at low constant suction (if obstruction). Foley to closed drainage.

9. Special Medications:

-Ranitidine (Zantac) 6.25-12.5 mg/h (0.2-0.4 mg/kg/h)(150-300 mg in 500 mL D5W at 21 mL/h) IV or 50 mg IV q6-8h
OR

-Cimetidine (Tagamet) 37.5-100 mg/h IV or 300 mg IV q6-8h
OR

-Famotidine (Pepcid) 20 mg IV q12h.

- Ticarcillin/clavulanate (Timentin) 3.1 gm IV or Ampicillin/sulbactam (Unasyn) 3.0 gm IV q6h or Imipenem (Primaxin) 0.5-1.0 gm IV q6h (best choice for pancreatitis ascites). Antibiotics not required in uncomplicated pancreatitis. Antibiotics are indicated for infected pseudocyst or pancreatitis ascites.
- Heparin 5000 U SQ q12h.
- Total Parenteral Nutrition, if malnutrition or if NPO for >7 days; see page 85.

10. Symptomatic Medications:

- Meperidine 50-100 mg IM q3-4h prn pain.

11. Extras: Upright abdomen, portable CXR, ECG, ultrasound, CT with contrast. Surgery and GI consults.

12. Labs: CBC, platelets, SMA 7 & 12, ionized & total calcium, triglycerides, amylase, lipase, LDH, AST, ALT, GGT; blood C&S x 2, HBsAg, INR/PTT, type & hold 4-6 U PRBC & 2-4 U FFP. Pancreatic isoamylase, immunoreactive trypsin, chymotrypsin, elastase, CA 19-9 antigen. UA, urine culture.

13. Other Orders and Meds:

Empiric Therapy of Diarrhea

1. Admit to:

2. Diagnosis: Diarrhea

3. Condition:

4. Vital signs: tid; call physician if BP >160/90, <80/60; P >120; R>25; T >38.5°C

5. Activity: Up ad lib

6. Nursing: Daily weights, I&O, stool volumes

7. Diet: NPO except ice chips x 24h, then low residual elemental diet; no milk products.

8. IV Fluids: 1-3 L NS over 1-3 hours; then D5 1/2 NS with 40 mEq KCL/L at 150 cc/h.

9. Special Medications:

Febrile or gross blood in stool or neutrophils on microscopic exam or prior travel:

-Ciprofloxacin (Cipro) 500 mg PO bid x 10-14 days **OR**

-Norfloxacin (Noroxin) 400 mg PO bid **OR**

-Ofloxacin (Floxin) 300 mg bid **OR**

-Trimethoprim/SMX (Bactrim DS) one double strength (160/800 mg) tab PO bid x 10-14 days.

Symptomatic Meds if indicated:

-Kaopectate 60-90 cc PO qid or after each loose BM prn **OR**

-Loperamide (Imodium) 2-4 mg PO tid-qid prn, max 16 mg/d **OR**

-Diphenoxylate HCL (Lomotil) 1-2 tabs PO qid, max 12 tabs/day.

-Pepto Bismol 30 cc PO q30min x 8 hours.

11. Extras: Upright abdomen. GI consult.

12. Labs: SMA7 & 12, CBC with differential, UA, blood culture x 2. Amebic serum titers, HIV test.

Stool studies: Wright's stain for fecal leukocytes, ova & parasites x 3, C difficile toxin & culture, C&S, E coli 0157:H7 culture.

13. Other Orders & Meds:

Specific Therapy of Diarrhea

Shigella:

- Trimethoprim/SMX, (Bactrim) double strength tab PO bid x 5 days **OR**
- Ciprofloxacin (Cipro) 500 mg PO bid x 5 days

Salmonella (bacteremia):

- Ofloxacin (Oflox) 400 mg IV/PO q12h x 14 days **OR**
- Ciprofloxacin (Cipro) 400 mg IV q12h or 750 mg PO q12h x 14 days **OR**
- Trimethoprim/SMX (Bactrim) DS tab PO bid x 14 days **OR**
- Ceftriaxone (Rocephin) 2 gms IV q12h x 14 days.

Campylobacter jejuni:

- Erythromycin 250 mg PO qid x 5-10 days

Enterotoxigenic/Enteroinvasive E coli (Travelers Diarrhea):

- Ciprofloxacin 500 mg PO bid x 5-7 days **OR**
- Trimethoprim/SMX (Bactrim), double strength tab PO bid x 5-7 days.

Antibiotic Associated & Pseudomembranous Colitis (Clostridium difficile)(discontinue offending antibiotic):

- Metronidazole (Flagyl) 250 mg PO or IV qid x 10-14 days **OR**
- Vancomycin 125 mg PO qid x 10 days (500 PO qid x 10-14 days, if recurrent).

AIDS ASSOCIATED DIARRHEA (severe refractory secretory diarrhea):

-Octreotide (Sandostatin) 50-200 mcg SQ tid-qid prn severe refractory secretory diarrhea.

Yersinia Enterocolitica (sepsis):

-Trimethoprim/SMX (Bactrim), double strength tab PO bid x 5-7 days **OR**

-Ciprofloxacin 500 mg PO bid x 5-7 days **OR.**

-Ofloxacin (Floxin) 400 mg PO bid.

Entamoeba Histolytica (Amebiasis):

Mild to Moderate Intestinal Disease:

-Metronidazole (Flagyl) 750 mg PO tid x 10 days **OR**

-Tinidazole 2 gm per day PO x 3 days. **Followed By:**

-Iodoquinol 650 mg PO tid x 20 days **OR**

-Paromomycin 25-30 mg/kg/d PO in 3 divided doses x 7 days.

Severe Intestinal Disease:

-Metronidazole 750 mg PO tid x 10 days **OR**

-Tinidazole 600 mg PO bid x 5 days **Followed By:**

-Iodoquinol 650 mg PO tid x 20 days **OR**

-Paromomycin 25-30 mg/kg/d PO in 3 divided doses x 7 days.

Giardia Lamblia:

-Quinacrine HCL 100 mg PO tid x 5d **OR**

-Metronidazole 250 mg PO tid x 7 days.

Other Orders & Meds:

Crohn's Disease

1. Admit to:

2. Diagnosis: Crohn's disease.

3. Condition:

4. Vital signs: q4-6h; call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C

5. Activity: Up ad lib in room.

6. Nursing: Daily weights, I&O. NG at low intermittent suction (if obstruction).

7. Diet: NPO except for ice chips and medications x 48h, then low residue or elemental diet, no milk products.

8. IV Fluids: 1-3 L NS over 1-3h, then D5 1/2 NS with 40 mEq KCL/L at 150 cc/hr.

9. Special Medications:

-Sulfasalazine (Azulfidine) 0.5-1 gm PO bid; increase over 10 d to 0.5-1 gm PO qid **OR**

-Olsalazine (Dipentum) 500 mg PO bid **OR**

-Mesalamine (Asacol) 400-800 mg PO tid or Mesalamine (Pentasa) 1000 mg (four 250 mg tabs) PO qid.

-Prednisone 40-60 mg/d PO in divided doses **OR**

-Hydrocortisone 50-100 mg IV q6h **OR**

-Methylprednisolone 10-20 mg IV q6h.

-Metronidazole (Flagyl) 250-500 mg PO q6h; used for Crohn's disease with perianal fistula.

Other Medications:

-B12, 100 mcg IM x 5d then 100-200 mcg IM q month.

-Multivitamin PO qAM or 1 ampule IV qAM.

-Folate 1 mg PO qd. (especially if sulfasalazine used)

10. Extras: Abdominal x-ray series. CXR. GI consult.

11. Labs: CBC, SMA 7 & 12, Mg, ionized calcium, liver panel, blood C&S x 2; stool Wright's stain, stool culture, C difficile toxin assay, stool ova and parasites x 3.

12. Other Orders and Meds:

Ulcerative Colitis

1. Admit to:

2. Diagnosis: Ulcerative colitis/Crohn's disease.

3. Condition:

4. Vital signs: q4-6h; call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C

5. Activity: Up ad lib in room.

6. Nursing: Daily weights, I&O.

7. Diet: NPO except for ice chips x 48h, then low residue or elemental diet, no milk products.

8. IV Fluids: 1-3 L NS over 1-3h, then D5 1/2 NS with 40 mEq KCL/L at 150 cc/hr.

9. Special Medications:

-Sulfasalazine (Azulfidine) 0.5-1 gm PO bid, increase over 10 d as tolerated to 0.5-1.0 gm PO qid **OR**

-Olsalazine (Dipentum) 500 mg PO bid **OR**

-5-aminosalicylate (Mesalamine) 400-800 mg PO tid or 1 gm PO qid or enema 4 gm/60 mL PR qhs (retain for 8h) **OR**

-Mesalamine (Asacol) 400-800 mg PO q8h **OR**

-Hydrocortisone retention enema, 100 mg in 120 mL saline bid

-Methylprednisolone 10-20 mg IV q6h **OR**

-Hydrocortisone 100 mg IV q6h **OR**

-Prednisone 40-60 mg/d PO in divided doses.

Other Medications:

- B12, 100 mcg IM x 5d then 100-200 mcg IM q month.
- Multivitamin PO qAM or 1 ampule IV qAM.
- Folate 1 mg PO qd. (especially if sulfasalazine used)

10. Symptomatic Medications:

- Loperamide (Imodium) 2-4 mg PO tid-qid prn, max 16 mg/d (not in acute phase) **OR**
- Kaopectate 60-90 mL PO qid prn.

11. Extras: Upright abdomen. CXR. colonoscopy. GI consult.

12. Labs: CBC, SMA 7 & 12, Mg, ionized calcium, liver panel, blood C&S x 2; stool Wright's stain, stool for ova and parasites x 3 and enteric pathogens; urine culture; type and crossmatch for 2 units packed red blood cells, C difficile toxin assay.

13. Other Orders and Meds:

Parenteral Nutrition

General Considerations: Daily weights, I&O. Finger stick glucose qid.

Peripheral Parenteral Supplementation:

- 3% amino acid sln (ProCalamine) up to 3 L/d at 125 cc/h **OR**
- Combine 500 mL amino acid solution 7% or 10% (Aminosyn) & 500 mL 20% dextrose & electrolyte additive. Infuse at up to 100 cc/hr in parallel with:
- Intralipid 10% or 20% at 1 mL/min for 15 min (test dose); if no adverse reactions, infuse 500 mL/d at 21 mLs/h over 24h, or up to 100 mLs/h over 5 hours daily.
- Draw triglyceride level 6h after end of Intralipid infusion.
- Change IV site q3-4 days.

Central Parenteral Nutrition:

-Infuse 40-50 mL/h of amino acid-dextrose solution in the first 24h; increase daily by 40 mL/hr increments until providing 1.3-2 x basal energy requirement & 1.2-1.7 gm protein/kg/d (see formula page 97).

Standard solution:

Amino acid sln (Aminosyn) 7-10%	500 mL
Dextrose 40-70%	500 mL
Sodium	35 mEq
Potassium	36 mEq
Chloride	35 mEq
Calcium	4.5 mEq
Phosphate	9 mMol
Magnesium	8.0 mEq
Acetate	82-104 mEq
Multi-Trace Element Formula (Zn, copper, manganese, chromium)	1 mL/d
Regular insulin (if indicated)	10-60 U/L
Multivitamin(12)(2 amp) (vitamin C, A, D, E, B12, thiamine, riboflavin, pyridoxine, niacinamide, pantothenate, biotin, folate)	10 mL/d
Vitamin K (in solution, SQ, IM)	10 mg/week
Vitamin B12	1000 mcg/week
Selenium (after 20 days of continuous TPN)	80 mcg/d

WITH:

Intralipid 20% 500 mL/d IVPB; infuse in parallel with standard solution at 1 mL/min x 15 min; if no adverse reactions, increase to 100 mL/hr. Obtain serum triglyceride 6h after end of infusion (maintain <250 mg/dL).

CYCLIC TPN 12h night schedule; Taper continuous infusion in morning by reducing rate to half original rate for 1 hour. Further reduce rate by half for an additional hour, then discontinue. Finger stick glucose q4-6h; Restart TPN in afternoon. Taper at beginning & end of cycle. Final rate of 185 mL/hr for 9-10 h and 2 hours of taper at each end for total of 2000 mL.

7. Special Medications:

- Cimetidine (Tagamet) 300 mg IV q6-8h or in TPN **OR**
- Ranitidine (Zantac) 50 mg IV q6-8h or in TPN bid.
- Insulin sliding scale.

8. Extras: Nutrition consult.

9. Labs:

Baseline - draw all labs below.

Daily labs - SMA7, osmolality, CBC, cholesterol, triglyceride (6 h after infusion), urine glucose & specific gravity.

Twice weekly Labs - Cal, phosphate, SMA-12, magnesium

Weekly Labs when indicated - Protein, Mg, iron, TIBC, transferrin, INR/PTT, zinc, copper, B12, Folate, 24h urine nitrogen & creatinine. Pre-albumin, retinol-binding protein.

10. Other Orders and Meds:

Enteral Nutrition

General Considerations: Daily weights, I&O, nasoduodenal feeding tube. HOB at 30° while enteral feeding & 2 hours after completion. Record bowel movements.

Enteral Bolus Feeding - Give 50-100 mL of enteral solution (Jevity, Vionex, Osmolite) q3h initially. Increase amount in 50 mL steps to max of 250-300 mL q3-4h; 30 kcal of nonprotein

calories/kg/d & 1.5 gm protein/kg/d. Before each feeding measure residual volume, and delay feeding by 1h if >100 mL. Flush tube with 100 cc of water after each bolus.

Continuous enteral infusion - Initial enteral solution (Jevity, Vionex, Osmolite) 30 mL/hr. Measure residual volume q1h x 12h then tid; hold feeding for 1h if >100 mL. Increase rate by 25-50 mL/hr at 24 hr intervals as tolerated until final rate of 50-100 mL/hr as tolerated. 3 Tablespoonfuls of protein powder (Promix) may be added to each 500 cc of solution. Flush tube with 100 cc water q8h.

Special Medications:

- Metoclopramide (Reglan) 10-20 mg PO or in J tube q6h **OR**
- Cisapride (Propulsid) 10-20 mg via nasogastric tube qid.
- Cimetidine (Tagamet) 400 mg PO bid **OR**
- Ranitidine (Zantac) 150 mg PO bid.

Symptomatic Medications:

- Loperamide (Imodium) 2-4 mg PO/J-tube q6h, max 16 mg/d prn **OR**
- Diphenoxylate/atropine (Lomotil) 1-2 tabs or 5-10 mL (2.5 mg/5 mLs) PO/J-tube q4-6h prn, max 12 tabs/d **OR**
- Codeine sulfate 30 mg PO or in J-tube q6h.
- Kaopectate 30 cc PO or in J-tube q8h.

Extras: CXR, plain film for tube placement, nutrition consult.

Labs:

Daily labs - SMA7, osmolality, CBC, cholesterol, triglyceride. SMA-12

Weekly Labs when indicated - Protein, Mg, INR/PTT, 24h urine nitrogen & creatinine. Pre-albumin, retinol-binding protein.

Other Orders and Meds:

Hepatic Encephalopathy

- 1. Admit to:**
- 2. Diagnosis:** Hepatic encephalopathy
- 3. Condition:**
- 4. Vital signs:** q1-4h, neurochecks q4h; Call physician if BP $>160/90, <90/60$; P $>120, <50$; R $>25, <10$; T $>38.5^{\circ}\text{C}$
- 5. Allergies:** Avoid sedatives, diuretics, NSAIDS or hepatotoxic drugs.
- 6. Activity:** Bed rest.
- 7. Nursing:** Keep head-of-bed at 40 degrees, guaiac stools; turn patient q2h while awake, chart stools and notify physician if patient does not have a stool at least twice a day. Seizure precautions, egg crate mattress, soft restraints prn. Record inputs and outputs.
- 8. Diet:** Nasogastric enteral feedings at 30 mL/hr. Increase rate by 25-50 mL/hr at 24 hr intervals as tolerated until final rate of 50-100 mL/hr as tolerated. No dietary protein for 8 hours. Give 2000 calories per day of low protein diet.
- 9. IV Fluids:** D5W at TKO, Foley to closed drainage.
- 10. Special Medications:**
 - Sorbitol 500 mL in 200 mL of water PO now.
 - Lactulose 30-45 mL PO q1h x 3 doses, then 15-45 mL PO bid-qid titrate to produce 3 soft stools/d **OR**
 - Lactulose enema 300 mL in 700 mL of tap water bid-qid, (may use rectal balloon catheter to retain 30-60 min, left side Trendelenburg x 15 min, then right side with head elevated); may give cleansing Fleet enema x 2 before lactulose **AND**

- Neomycin 1 gm PO q4-6h (4-12 g/d) **OR**
- Metronidazole (Flagyl) 250 mg PO q6h.
- Ranitidine (Zantac) 50 mg IV q6-8h or 150 mg PO bid **OR**
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Flumazenil (Romazicon) 0.2 mg (2 mL) IV over 30 seconds
q1min until a total dose of 3 mg; if a partial response occurs,
continue 0.5 mg doses until a total of 5 mg.
- Multivitamin PO qAM or 1 ampule IV qAM.
- Folic acid 1 mg PO/IV qd.
- Thiamine 100 mg PO/IV qd.
- Vitamin K 10 mg IM qd x 3 days if elevated PT (INR)

11. Extras: CXR, ECG, GI & dietetics consults.

12. Labs: Ammonia, CBC, platelets, SMA 7 & 12, Mg, Cal, AST, ALT, GGT, LDH, alkaline phosphatase, protein, albumin, bilirubin, INR/PTT, ABG, blood C&S x 2, hepatitis panel. UA.

13. Other Orders and Meds:

Alcohol Withdrawal

1. **Admit to:**

2. **Diagnosis:** Alcohol withdrawals / Delirium tremens.

3. **Condition:**

4. **Vital signs:** q4-6h; Call physician if BP >160/90, <90/60; P >130, <50; R>25, <10; T >38.5°C; or increase in agitation, confusion, tremor, or change in neurological status.

5. **Activity:**

6. **Nursing:** Seizure precautions. Soft restraints prn.

7. **Diet:** Regular, push fluids.

8. **IV Fluids:** Hep-lock or D5 1/2 NS at 100-175 cc/h.

9. **Special Medications:**

Withdrawal syndrome:

-Chlordiazepoxide (Librium) 50-100 mg PO/IV q6h x 3 days
OR

-Diazepam (Valium) 5-20 mg PO/IV q6-8h

Delirium tremens:

-Chlordiazepoxide 100 mg slow IV push or PO, repeat q4-6h prn agitation or tremor x 24h; max 500 mg/d. Then give 50-100 mg PO q6h prn agitation or tremor **OR**

-Diazepam (Valium) 5 mg slow IV push repeat q6h until calm, then 5-10 mg PO q4-6h.

Seizures:

-Diazepam 5-10 mg IV q5-15 min prn seizures, may repeat 5 mg q10-15min prn; max dose 30 mg.

10. **Symptomatic Medications:**

-Magnesium sulfate 1-8 gm in 100 mL D5W over 2-8h qd.

-Multivitamin 1 amp IV, then 1 tab PO qd.

-Folate 1 mg PO qd.

-Thiamine 100 mg PO qd.

-Acetaminophen 625 mg PO q4-6h prn headache.

-Metoclopramide (Reglan) 10 mg PO/IV q6h prn nausea.

11. Extras: CXR, ECG. Alcohol rehabilitation & social work consult.

12. Labs: CBC, SMA 7 & 12, Mg, amylase, lipase, liver panel, VDRL, urine drug screens. UA, INR/PTT.

13. Other Orders and Meds:

Toxicology

Poisoning and Drug Overdose

Decontamination:

Ipecac (not if ingestion of acid/base, caustics, tricyclics, or if obtundent, impaired gag reflex, seizing):

-Ipecac syrup (only if <1h after ingestion), 30 mL with 240-480 mL liquid; may repeat x 1 after 30 minutes if no emesis.

Gastric Lavage: Place patient left side down, place nasogastric tube and check position by injecting air & auscultating. NS lavage until clear fluid, then leave activated charcoal or other antidote prn. Gastric lavage is contraindicated for corrosives.

Cathartics:

-Magnesium citrate 6% sln 150-300 mL PO

-Magnesium sulfate 10% solution 150-300 mL PO.

Activated Charcoal: 50 gm PO (first dose should be given using product containing sorbitol as cathartic). Repeat q2-6h if indicated.

Hemodialysis: Indicated for isopropanol, methanol, ethylene glycol, severe salicylate intoxication (>100 mg/dL), lithium, theophylline (if neurotoxicity, seizures, or coma).

Antidotes:

Narcotic or Propoxyphene Overdose:

-Naloxone hydrochloride (Narcan) 0.4 mg IV/ET/IM/SC, may repeat q2min.

Methanol or Ethylene Glycol Overdose:

-Ethanol 60-80 mL (10% inj sln) IV over 30min, then 0.8-1.4 mL/kg/h. Maintain ethanol level 100-150 mg/100 mL.

Carbon Monoxide Overdose:

-Hyperbaric oxygen therapy or 100% oxygen by mask if hyperbaric oxygen not available.

Phenothiazine or Extrapyrarnidal Reaction:

-Diphenhydramine (Benadryl) 25-50 mg IV/IM q6h x 4 doses; followed by 25-50 mg IV/PO q6h for 24-72h prn **OR**

-Benzotropine (Cogentin) 1-2 mg IV, then 1-2 mg IV/PO bid prn.

Benzodiazepine Overdose (Diazepam, midazolam, lorazepam, alprazolam):

-Flumazenil (Romazicon) 0.2 mg (2 mL) IV over 30 seconds q1min until a total dose of 3 mg; if a partial response occurs, continue 0.5 mg doses until a total of 5 mg. If the patient has continued sedation (respiratory depression does not reverse appreciably), repeat the above regimen or start a continuous IV infusion 0.1-0.5 mg/h. Excessive doses, beyond reversal of sedation, may cause seizures.

Labs: Drug screen (serum, gastric, urine); blood levels, SMA 7, fingerstick glucose, CBC, LFT's, ECG.

Other Orders and Meds:

Acetaminophen Overdose

- 1. Admit to:** Medical intensive care unit.
- 2. Diagnosis:** Acetaminophen overdose
- 3. Condition:**
- 4. Vital signs:** q1-4h with neurochecks; Call physician if BP >160/90, <90/60; P >130, <50 <50; R>25, <10; urine output <20 cc/h for 3 hours.
- 5. Activity:** Bed rest with bedside commode.
- 6. Nursing:** I&O, aspiration & seizure precautions. Place large bore (Ewald) NG tube, then lavage with 2 L of NS.
- 7. Diet:** NPO
- 8. IV Fluids:**
- 9. Special Medications:**
 - Activated Charcoal 30-100 gm doses, remove via NG suction prior to acetylcysteine.
 - Acetylcysteine (Mucomyst, NAC) loading 140 mg/kg PO, then 70 mg/kg PO q4h x 17 doses (dilute to 5% sln)(follow acetaminophen levels) **OR** IV acetylcysteine 150 mg/kg in 200 mL D5W IV over 15 min, followed by 50 mg/kg in 500 mL D5W, infused over 4h, followed by 100 mg/kg in 1000 mL of D5W over next 16h. Filter solution through 0.22 micron filter prior to administration. Complete all 17 doses, even after acetaminophen level falls below critical value.
 - Phytonadione 5 mg IV/IM/SQ (if INR increased).
 - Fresh frozen plasma 2-4 U (if INR increased).
 - Trimethobenzamide (Tigan) 100-200 mg IM/PR q6h prn nausea
- 10. Extras:** ECG. Nephrology consult for possible hemodialysis or charcoal hemoperfusion. GI consult.

11. Labs: CBC, SMA 7&12, LFT's, INR/PTT, acetaminophen level now & in 4h (plot on nomogram). UA.

12. Other Orders and Meds:

Theophylline Overdose

1. Admit to: Medical intensive care unit.

2. Diagnosis: Theophylline overdose

3. Condition:

4. Vital signs: Neurochecks; Call physician if: BP >160/90, <90/60; P >130; <50; R >25, <10.

5. Activity: Bed rest

6. Nursing: ECG monitoring until level <20 mcg/mL, aspiration & seizure precautions. Insert single lumen NG tube and lavage with normal saline if recent ingestion.

7. Diet: NPO

8. IV Fluids: D5 1/2 NS at 125 cc/h

9. Special Medications:

-Activated Charcoal 50 gm PO q4-6h, with sorbitol cathartic (30 mLs of 70% sln) regardless of time of ingestion, until theophylline level <20 mcg/mL. Maintain head-of-bed at 30-45 degrees to prevent aspiration of charcoal.

-Charcoal hemoperfusion is indicated if serum level >60 mcg/mL, or signs of neurotoxicity, seizure, coma.

Seizure (support oxygenation & respirations): Phenobarbital or lorazepam, see page 103.

10. Extras: ECG.

11. Labs: CBC, SMA 7 & 12, theophylline level now & in 4h; INR/PTT, liver panel. UA.

12. Other Orders and Meds:

Tricyclic Antidepressant Overdose

1. **Admit to:** Medical intensive care unit.
2. **Diagnosis:** TCA Overdose
3. **Condition:**
4. **Vital Signs:** Neurochecks q1h.
5. **Activity:** Bedrest.
6. **Nursing:** Continuous suicide observation. ECG monitoring, measure QRS width, I&O, aspiration and seizure precautions. Place single lumen nasogastric tube and lavage with saline if recent ingestion.
7. **Diet:** NPO
8. **IV Fluids:** NS at 100-150 cc/hr.
9. **Special Medications:**
 - Activated charcoal premixed with Sorbitol 50 gms via NG tube q4-6h round-the-clock until TCA level decreases to therapeutic range. Maintain head-of-bed at 30-45 degree angle to prevent charcoal aspiration.
 - Magnesium citrate 300 mLs via nasogastric tube x 1 dose.
10. **Cardiac Toxicity:** Alkalinization is a cardioprotective measure and has no influence on drug elimination. Treatment goal is to achieve an arterial pH of 7.50-7.55.
 - If mechanical ventilation is necessary, hyperventilate to maintain desired pH.
 - Administer sodium bicarbonate 50-100 mEq (1-2 amps or 1-2 mEq/kg) IV over 5-10 min, followed by infusion of

sodium bicarbonate 2 amps in D5W 1 L at 100-150 cc/h.
Adjust rate to maintain pH 7.50-7.55.

11. Extras: ECG.

12. Labs: Urine toxicology screen, serum TCA levels, liver panel, CBC, SMA-7 & 12, UA.

13. Other Orders and Meds:

Neurology

Ischemic Stroke

1. **Admit to:**
2. **Diagnosis:** Ischemic stroke
3. **Condition:**
4. **Vital signs:** q1-4h with neurochecks; call physician if BP >200/110, <90/60; P >120, <50; R>25, <10; T >38.5°C; or change in neurologic status.
5. **Activity:** Bedrest for 24 hours, then up with assistance and in chair tid if tolerated.
6. **Nursing:** head-of-bed at 30 degrees, turn q2h when awake, range of motion exercises qid, Foley catheter, eggcrate mattress, sheepskin blanket on bed; heal & elbow pads. Guaiac stools, I&O's.
7. **Diet:** NPO until swallowing ability confirmed or dysphagia ground with thickened liquids.
8. **IV Fluids:** LR at 30-100 cc/h.
9. **Special Medications:**

Completed Ischemic Stroke:

- Aspirin enteric coated 325 mg PO qd **OR**
- Ticlopidine (Ticlid) 250 mg PO bid.

Cardiogenic, Evolving, or Vertebrobasilar Ischemic Stroke:

- Heparin, start immediately without bolus in non-hemorrhagic, small to moderate size infarcts: 700-800 U/h (12 U/kg/h) IV (25,000 U in 500 mL D5W); adjust q6-12h until PTT 1.5-2.0 x control.
- Warfarin 5.0-7.5 mg PO qd x 3d, then 2-4 mg (2-15 mg/d) PO qd. Maintain International Normalizing Ratio of 2-3

Maintain warfarin for patients with evidence of cardiogenic or vertebrobasilar sources).

10. Symptomatic Medications:

- Docusate sodium (Colace) 100 mg PO qhs.
- Milk of magnesia 30 mL PO qd prn constipation **OR**
- Bisacodyl (Dulcolax) 10-15 mg PO qhs or 10 mg PR prn.
- Ranitidine (Zantac) 50 mg IV q6-8h or 150 mg PO bid **OR**
- Acetaminophen 1-2 tabs PO/PR q4-6h prn temp > 100 or headache.
- Heparin 5,000 SQ bid.

11. Extras: CXR, ECG, CT without contrast or MRI with or without gadolinium; carotid duplex scan with vertebral artery imaging; echocardiogram; swallowing studies. Physical therapy consult for passive and active range of motion exercises; neurology, rehab medicine consults.

12. Labs: CBC, glucose, SMA 7 & 12, fasting lipid profile, VDRL, ESR; drug levels, INR/PTT, UA. Thrombosis panel, lupus anticoagulant, and anticardiolipin antibody.

13. Other Orders and Meds:

Transient Ischemic Attack

1. Admit to:

2. Diagnosis: Transient ischemic attack

3. Condition:

4. Vital signs: q1-4h with neurochecks; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; or change in neurologic status.

5. Activity: Bed rest until AM, then up as tolerated.

6. Nursing: Guaiac stools.

7. Diet: Dysphagia ground with thickened liquids or NPO.

8. IV Fluids: Heplock with flush q shift.

9. Special Medications:

-Aspirin 325 mg PO qd **OR**

-Ticlopidine (Ticlid) 250 mg PO bid **OR**

-Heparin (only if recurrent TIA's; cardiogenic or vertebrobasilar source for emboli), 700-800 U/h (12 U/kg/h) IV infusion, without bolus (25,000 U in 500 mL D5W); adjust q6-12h until PTT 1.5-2.0 x control.

-Warfarin (Coumadin) 5.0-7.5 mg PO qd x 3d, then 2-4 mg PO qd. Maintain INR of 2.0-3; maintain warfarin for patients with evidence of cardiogenic or vertebrobasilar sources.

10. Symptomatic Medications:

-Docusate sodium (Colace) 100 mg PO qhs.

-Milk of magnesia 30 mL PO qd prn constipation

-Ranitidine (Zantac) 150 mg PO bid.

11. Extras: CXR, ECG, CT without contrast; carotid duplex scan, echocardiogram. Physical therapy, neurology consults.

12. Labs: CBC, glucose, SMA 7 & 12, fasting lipid profile, VDRL, drug levels, INR/PTT, UA. Thrombosis panel, lupus anticoagulant, and anticardiolipin antibody.

13. Other Orders and Meds:

Subarachnoid Hemorrhage

Treatment:

- Stat neurosurgery consult.
- Increased intracranial pressure, see page 102.
- Head of bed at 20 degrees, turn patient q2h, range of motion exercises qid, Foley catheter, eggcrate mattress, heal & elbow pads. Guaiac stools.
- Keep room dark and quiet; no rectal exams; strict bedrest. Neurologic checks q1h for 12 hours, then q2h for 12 hours, then q4h; call physician if abrupt change in neurologic status.
- Diet: Restrict total fluids to 1000 mL/day; remainder of diet as tolerated (if possible, should be high-residue with prunes).
- Nimodipine (Nimotop) 60 mg PO or via NG tube q4h x 21d, must start within 96 hours (not useful in subarachnoid hemorrhage due to trauma).

Hypertension:

- Nitroprusside sodium, 0.1-0.5 mcg/kg/min (50-200 mg/250 mL NS), titrate to control blood pressure.
- Phenytoin (if seizure) IV load 15 mg/kg IV in NS (infuse at max 50 mg/min) in dextrose free IV, then 300 mg PO/IV qAM (4-6 mg/kg/d).
- Codeine 30-60 mg PO, IM, IV, or SQ q4-6h prn head pain.

Extras: CXR, ECG, CT without contrast; MRI angiogram; cerebral angiogram. Neurology, neurosurgery consults.

Labs: CBC, SMA 7 & 12, VDRL, UA.

Other orders and meds:

Increased Intracranial Pressure

Short-Term Measures to Reduce Pressure:

- Stat neurosurgery consult for possible placement ventricular drainage device with monitoring of intracranial pressure, or evacuation of hematoma.
- Restrict fluid to $\frac{1}{2}$ maintenance, isotonic fluids. Head of bed at 30 degrees, head midline.
- Dexamethasone (Decadron) 10 mg IV or IM , followed by 4-6 mg IV, IM or PO q6h.
- Hyperventilation - maintain PCO_2 25-30 mm Hg.
- Mannitol, 100 gm (1-1.5 gm/kg) IV over 10-20 min (100 gm in 500 cc D5W), repeated q4-6h as needed; in less severe situations give 37.5-50 gm IV (0.5-1 gm/kg); keep osmolarity <315; do not give for more than 48h.
- Furosemide (Lasix) 40-80 mg IV or PO qd-bid.
- Pentobarbital (barbiturate coma) 7.5 mg/kg/h IV for 3 h, then 2-3 mg/kg/h IV infusion, maintain pentobarbital level of 25-40 mg/L; requires intubation.

Other orders and meds:

Seizure and Status Epilepticus

1. **Admit to:**

2. **Diagnosis:** Seizure

3. **Condition:**

4. **Vital signs:** q1-4h with neurochecks; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; or any change in neurological status.

5. **Activity:** Bed rest

6. **Nursing:** Finger stick glucose. Seizure precautions with bed rails up, padded tongue blade at bedside. EEG monitoring. Observe patient as frequently as possible.

7. **Diet:** NPO x 24h, then regular diet if alert.

8. **IV Fluids:** D5 1/2 NS at 100 cc/hr; change to hep-lock when taking PO.

9. **Special Medications:**

Status Epilepticus:

1. Maintain airway.

2. The patient should be positioned laterally with the head down, in order to promote drainage of secretions and prevent aspiration. The head and extremities should be cushioned to prevent injury.

3. During the tonic portion of the seizure, the teeth are tightly clenched. During the clonic phase that follows, however, a bite block or other soft object should be inserted into the mouth to prevent injury to the tongue.

4. 100% O₂ by mask, obtain brief history & physical, fingerstick glucose.

5. Secure IV access and draw blood for serum glucose analysis. Give **glucose, 50 mL of 50%** (1 amp) IV (in children, 4 mL/kg of 25% dextrose). Give **thiamine, 100 mg** IV.

6. Initial Control:

Lorazepam (Ativan) 4-8 mg (0.1 mg/kg; not to exceed 2 mg/min) IV at 1-2 mg/min. May repeat 4-8 mg q5-10min (max 80 mg/24h) **OR**

Diazepam, 5-20 mg slow IV at 1-2 mg/min. Repeat 5-10 mg q5-10 min prn (max 100 mg/24h).

7. Definitive Seizure Control:

Phenytoin 15-20 mg/kg load, in NS at 50 mg/min. Repeat 100-150 mg IV q30min, max 1.5 gms; monitor BP & ECG (QT interval). Hypotension may occur but should not preclude phenytoin; reduce the rate.

If Seizures Persist, Intubate Patient, Administer Phenobarbital 120-260 mg (10-20 mg/kg) IV at 50 mg/min, repeat 20 mg/kg q15min; additional phenobarbital may be given, up to max of 30-60 mg/kg.

8. **If Seizures Persist, Consider:** Induction of Coma: Pentobarbital 10-15 mg/kg IV over 1-2h, then 1-1.5 mg/kg/h continuous infusion.

9. Consider Intubation and General Anesthesia

Maintenance Therapy for Epilepsy:

Primary Generalized:

First Line Therapy:

-Carbamazepine (Tegretol) 200-400 mg PO tid [100, 200 mg].
Pre-treatment blood counts, then weekly for 6 weeks, then monthly indefinitely.

-Phenytoin (Dilantin) loading dose of 400 mg followed by 300 mg q4h x 2 doses (total of 1 g), then 300 mg qd or 100 mg tid or 200 mg bid [30, 50, 100 mg].

-Valproic acid (Depakene) 250-500 mg PO tid-qid [250 mg].

-Divalproex (Depakote) 15-30 mg/kg/d PO [125, 250, 500 mg];
less GI irritation than valproic acid.

Second Line Therapy:

-Phenobarbital 30-120 mg PO bid [8, 16, 32, 65, 100 mg].

-Primidone (Mysoline) 250-500 mg PO tid [50, 250 mg];
metabolized to Phenobarbital.

-Felbamate (Felbatol) 1200-2400 mg PO qd in 3-4 divided
doses, max 3600 mg/d [400,600 mg; 600 mg/5 mL susp];
adjunct therapy; high incidence of aplastic anemia.

-Gabapentin (Neurontin), 300-400 mg PO bid-tid; max 1800
mg/day [100, 300, 400 mg]; adjunct therapy.

-Lamotrigine (Lamictal) 50 mg PO qd initially, then 50-250 mg
PO bid [25, 100, 150, 200 mg]; adjunct therapy .

Partial Seizure:

-Carbamazepine (Tegretol) 200-400 mg PO tid [100, 200 mg].

-Valproic acid (Depakene) 250-500 mg PO tid-qid [250 mg].

-Divalproex (Depakote) 15-30 mg/kg/d PO [125, 250, 500 mg];
less GI irritation than valproic acid.

-Phenytoin 300 mg PO qd or 200 mg PO bid [30, 50, 100].

-Phenobarbital 30-120 mg PO tid or qd [8, 16, 32, 65, 100
mg].

-Primidone (Mysoline) 250-500 mg PO tid [50, 250 mg];
metabolized to phenobarbital.

-Felbamate (Felbatol) 1200-2400 mg PO qd in 3-4 divided
doses, max 3600 mg/d [400,600 mg; 600 mg/5 mL susp];
adjunct therapy; high incidence of aplastic anemia; high
incidence of aplastic anemia.

-Gabapentin (Neurontin), 300-400 mg PO bid-tid; max 1800
mg/day [100, 300, 400 mg]; adjunct therapy.

-Lamotrigine (Lamictal) 50 mg PO qd initially, then 50-250 mg
PO bid [25, 100, 150, 200 mg]; adjunct therapy .

Absence (Petit Mal):

- Ethosuximide (Zarontin) 250-500 mg PO tid-qid [250 mg].
- Valproate 250-500 mg PO tid-qid [250 mg].
- Divalproex (Depakote) 15-30 mg/kg/d PO [125, 250, 500 mg].
- Clonazepam (Klonopin) 0.5-5 mg PO bid-qid [0.5, 1, 2 mg].
- Lamotrigine (Lamictal) 50 mg PO qd initially, then 50-250 mg PO bid [25, 100, 150, 200 mg]; adjunct therapy .

Atypical Absence, Myoclonic:

- Valproate 250-500 mg PO tid-qid [250 mg]; high GI irritation.
- Divalproex (Depakote) 15-30 mg/kg/d PO [125, 250, 500 mg].
Less GI irritation.
- Clonazepam (Klonopin) 0.5-5 mg PO bid-qid [0.5, 1, 2 mg].
- Gabapentin (Neurontin), 300-400 mg PO bid-tid; max 1800 mg/day [100, 300, 400 mg].

10. Extras: MRI with & without gadolinium or CT; EEG (with photic stimulation, hyperventilation, sleep deprivation, awake and asleep tracings); portable CXR, ECG.

11. Labs: CBC, SMA 7, glucose, Mg, calcium, phosphate, liver panel; blood alcohol; ammonia levels, VDRL, anticonvulsant levels. UA, drug screen.

12. Other Orders and Meds:

Endocrinology

Diabetic Ketoacidosis

1. Admit to:

2. Diagnosis: Diabetic ketoacidosis

3. Condition:

4. Vital signs: q1h, postural BP & pulse; Call physician if BP >160/90, <90/60; P >140, <50; R >30, <10; T >38.5°C; or urine output < 20 mL/hr for more than 2 hours.

5. Activity: Bed rest with bedside commode.

6. Nursing: Daily weights, I&O. Foley to closed drainage. Record labs on flow sheet.

7. Diet: NPO for 12 hours, then clear liquids as tolerated. Tomorrow begin 1500 calorie American Diabetic Association diabetic diet.

8. IV Fluids:

0.5-5 L NS over 1-5h (≥ 16 gauge), infuse at 400-1000 mL/h until hemodynamically stable, then change to 0.45% saline at 150-400 cc/hr; keep urine output > 30-60 mL/h. If sodium is greater than 155, use 1/2 NS as IV fluid.

Add KCL when no ECG signs of hyperkalemia (peaked T) & urine output adequate, serum $K^+ \leq 5.8$ mEq/L.

Concentration.....20-40 mEq KCL/L

Rate.....10-40 mEq KCL/hr

May use K phosphate, 20-40 mEq/L, in place of KCL if low phosphate.

Change to **D5** 0.45% saline with 20-40 mEq KCL or K phosphate per liter when blood glucose 250-300.

9. Special Medications:

- Oxygen at 2-5 L/min by NC.
- Insulin Regular (Humulin) 7-10 units (0.1 U/kg) IV bolus, then 7-10 U/h IV infusion (0.1 U/kg/h) (50 U in 250 mL of 0.9% saline at 35 mL/hr) (flush IV tubing with 20 mL of insulin sln before starting infusion). Adjust insulin infusion to decrease serum glucose by 100 mg/dL or less per hour.
- After 2 hr of therapy, if bicarbonate level not rising and anion gap not falling, double insulin infusion rate; when bicarbonate level >16 mEq/L and anion gap <16 mEq/L, decrease insulin infusion rate by half
- When the glucose level reaches 250 mg/dL, 5% dextrose should be added to the replacement fluids with KCL 20-40 mEq/L.
- Use 10% glucose at 50-100 mL/h if anion gap still present, & serum glucose <100 mg/dL while on insulin infusion.
- Change to subcutaneous insulin when anion gap cleared; discontinue insulin drip only 1-2h after subcutaneous dose.

10. Extras: Portable CXR, ECG.

11. Labs: Fingerstick glucose q1-2h. SMA 7 q4-6h. SMA 12, pH, bicarbonate, phosphate, amylase, lipase, hemoglobin A1c; CBC, blood and sputum C&S x 2. Consider cardiac enzymes. UA, urine C&S, serum pregnancy test.

12. Other Orders and Meds:

Nonketotic Hyperosmolar Syndrome

1. Admit to:

2. Diagnosis: Nonketotic hyperosmolar syndrome

3. Condition:

4. Vital signs: q1h; Call physician if BP >160/90, <90/60; P >140, <50; R>25, <10; T >38.5°C; or urine output < 20 cc/hr for more than 4 hours.

5. Activity: Bed rest with bedside commode.

6. Nursing: Strict input and output measurement. Foley to closed drainage. Record labs on flow sheet.

7. Diet: NPO.

8. IV Fluids:

1-5 L NS over 1-6h (\geq 16 gauge IV catheter) until no longer hypovolemic, then give 0.45% saline at 200-300 cc/hr. Maintain urine output \geq 50 mL/h.

Add 20-40 mEq/L KCL when urine output adequate.

9. Special Medications:

-Insulin Regular 3-5 U/h IV infusion (50 U in 250 mL of 0.9% saline at 15-25 mL/hr).

-Ranitidine (Zantac) 50 mg IV q6-8h or 150 mg PO bid.

10. Extras: Portable CXR, ECG.

11. Labs: Fingerstick glucose q1h x 6h, then q6h. SMA 7, osmolality. SMA 12, phosphate, ketones, hemoglobin A1C, CBC, blood and sputum C&S x 2. UA, urine C&S.

12. Other Orders and Meds:

Thyrotoxicosis and Hyperthyroidism

1. **Admit to:**
2. **Diagnosis:** Thyrotoxicosis
3. **Condition:**
4. **Vital signs:** q1-4h; Call physician if BP >160/90, <90/60; P >130, <50; R>25, <10; T >38.5°C
5. **Activity:** Bed rest
6. **Nursing:** Cooling blanket prn temp >39°C, I&O. Oxygen 2-4 L/min by nasal canula.
7. **Diet:** Regular
8. **IV Fluids:** D5 1/2 NS with 20 mEq KCL at 125 cc/h.
9. **Special Medications:**

Thyrotoxicosis & Hyperthyroidism:

- Propylthiouracil 300-400 mg PO, then 50-250 mg PO q4-8h, up to 1200 mg/d, usual maintenance dose 50 mg PO tid **OR**
- Methimazole (Tapazole) 30-60 mg PO, then maintenance of 15 mg PO qd-bid **AND**
- Sodium iodide solution (Lugol's solution), 2-6 drops tid; one hour after propylthiouracil **AND**
- Propranolol 40-160 mg PO q6h or 5-10 mg/h, max 2-5 mg IV q4h or propranolol-LA (Inderal-LA), 80-120 mg PO qd [60, 80, 120, 160 mg] **AND**
- Hydrocortisone IV 100 mg/L q6h.
- Multivitamin tablet PO qd.
- Acetaminophen (Tylenol) 1-2 tabs PO q4-6h prn temp >38°C.
- Triazolam (Halcion) 0.125-0.5 mg PO qhs prn sleep **OR**
- Lorazepam (Ativan) 1-2 mg IV/IM/PO q4-8h prn anxiety or nervousness.

10. Extras: CXR PA & LAT, ECG, endocrine consult. If visual symptoms, obtain ophthalmology consult (rule out exophthalmos and/or optic neuropathy).

11. Labs: CBC, SMA 7&12; sensitive TSH, free T4. UA

12. Other Orders and Meds:

Myxedema Coma and Hypothyroidism

1. Admit to:

2. Diagnosis: Myxedema Coma

3. Condition:

4. Vital signs: q1h; Call physician if BP systolic >160/90, <90/60; P >130, <50; R>25, <10; T >38.5°C

5. Activity: Bed rest

6. Nursing: Triple blankets prn temp <36°C, I&O, aspiration precautions.

7. Diet: NPO

8. IV Fluids: IV D5 NS with 20 mEq KCL/L at 100-300 cc/hr.

9. Special Medications:

Myxedema Coma & Hypothyroidism:

-Volume replacement with NS at 200-300 cc/h & vasopressors if hypotensive. Correct hypoglycemia with 50% dextrose.

-Levothyroxine (Synthroid, T4, L-Thyroxine) 200-500 mcg IV over 2-4 min, then 100-200 mcg PO or IV qd.

-Hydrocortisone 100 mg IV loading dose, then 50-100 mg IV q8h.

Hypothyroidism in Medically Stable Patient:

-Levothyroxine (Synthroid, T4) 50-75 mcg PO qd, increase by 25 mcg PO qd at 2-4 week intervals, to 75-150 mcg qd until TSH normalized. Initial dose 12.5 mcg PO qd if cardiac disease. Increase by 12.5-25 mcg at 6 week intervals.

11. Extras: ECG, endocrine consult.

12. Labs: CBC, SMA 7&12; sensitive TSH, free T4. UA.

13. Other Orders and Meds:

Nephrology

Renal Failure

- 1. Admit to:**
- 2. Diagnosis:** Renal Failure
- 3. Condition:**
- 4. Vital signs:** tid, postural vitals qAM; Call physician if QRS complex > 0.14 sec; urine output < 20 cc/hr; BP $> 160/90$, $< 90/60$; P > 120 , < 50 ; R > 25 , < 10 ; T $> 38.5^{\circ}\text{C}$
- 5. Allergies:** Avoid magnesium containing antacids, salt substitutes, NSAIDS, & other nephrotoxins. Discontinue phosphate or potassium supplements unless depleted.
- 6. Activity:** Bed rest.
- 7. Nursing:** Daily weights, I&O, chart urine output q2h; if no urine output for 4h, I&O cath or Foley; Guaiac stools.
- 8. Diet:** Renal diet of high biologic value protein of 0.6 to 0.8 g/kg, sodium 2 g, potassium 1 mEq/kg, and at least 35 kcal/kg of nonprotein calories. In oliguric patients, daily fluid intake should be restricted to less than 1 L after volume has been normalized.
- 9. IV Fluids:** D5W at TKO.
- 10. Special Medications:**
 - Consider fluid challenge (to rule out pre-renal azotemia if not fluid overloaded) with 500-1000 mL NS IV over 30-60 min. In acute renal failure, I&O cath & check postvoid residual to rule out obstruction.
 - Furosemide (Lasix) 80-320 mg IV bolus over 10-60 min, double the dose if no response in 2h to total max 1000 mg/24h or furosemide 1000 mg in 250 mLs D5W at 20-40

mg/hr continuous IV infusion. Diuretics should be administered only after adequate central volume has been attained. **OR**

- Bumetanide (Bumex) 1-2 mg IV bolus over 1-20 min; double the dose if no response in 1-2 h to total max 10 mg/day.
- Metolazone (Zaroxolyn) 5-10 mg PO (max 20 mg/24h)
- Dopamine (Intropin) 1-3 mcg/kg per minute IV.
- Mild hyperkalemia may be treated with sodium polystyrene sulfonate (Kayexalate), 15-30 g orally every 4-6 hours. See page 121.
- Hyperphosphatemia can be controlled with aluminum hydroxide (Amphojel) 5-10 mL or 1-2 tablets PO given with meals tid.
- Metabolic acidosis may be treated with sodium bicarbonate to maintain the serum pH >7.2 and the bicarbonate level ≥ 20 mEq/L. 44-132 mEq (1-3 amps of 7.5%) IV over 5 min, repeat in 10-15 min. Followed by infusion of 2-3 amps in 500 cc of D5W, titrated over 2-4 h.
- Discontinue potentially nephrotoxic meds; aminoglycosides, NSAIDS, ACE-inhibitors, sulfonamides, amphotericin. Adjust all meds to creatinine clearance, & remove potassium from IV.

11. Extras: CXR, ECG, renal ultrasound, renal scan, nephrology & dietetics consults.

12. Labs: CBC, platelets, SMA 7 & 12, potassium, magnesium, phosphate, calcium, uric acid, osmolality, BUN. ESR, INR/PTT. ANA.

Urine specific gravity, UA with micro, urine C&S; 1st AM spot urine electrolytes, creatinine, pH, osmolality, urea; Wright's stain, eosinophiles, electrophoresis. 24h urine protein, creatinine, sodium, fractional excretion of sodium.

13. Other Orders and Meds:

Nephrolithiasis

1. **Admit to:**

2. **Diagnosis:** Nephrolithiasis

3. **Condition:**

4. **Vital signs:** q shift; Call physician if urine output <30 cc/hr; BP >160/90, <90/60; T >38.5°C

5. **Activity:** Bed rest with bedside commode.

6. **Nursing:** Strain urine, measure inputs and outputs. Place Foley, if no urine for 2 hours.

7. **Diet:** Regular, push oral fluids.

8. **IV Fluids:** IV D5 1/2 NS at 100-200 cc/hr (maintain urine output of 80 mL/h).

9. **Special Medications:**

-Cefazolin (Ancef) 1-2 gm IV q8h

10. **Symptomatic Medications:**

-Meperidine (Demerol) 75-100 mg & hydroxyzine 25 mg IM q2-4h prn pain **OR**

-Hydrocodone/Acetaminophen (Vicodin), 1-2 tab q4-6h PO prn pain **OR**

-Hydromorphone HCL (Dilaudid) 2-4 mg PO q4-6h prn pain **OR**

-Acetaminophen with codeine (Tylenol 3) 1-2 tabs PO q3-4h prn pain.

-Ketorolac (Toradol) 10 mg PO q4-6h prn pain or 30-60 mg IM then 15-30 mg IM q6h (for 5 days max).

-Zolpidem (Ambien) 10 mg PO qhs.

Note: If stone <5 mm without sepsis then discharge home with analgesics and increase PO fluids. If stone >10 mm and/or fever or increased WBC or signs of ureteral dilation, then consider admission of patient with urology consult.

11. Extras: IVP, KUB, CXR, ECG.

12. Labs: CBC, SMA 6 & 12, calcium, uric acid, phosphorous, UA with micro, urine C&S, urine pH, INR/PTT. Urine cystine (nitroprusside test), send stones for X-ray crystallography. If increased calcium, then check PTH level. 24 hour urine collection for uric acid, calcium, creatinine.

13. Other Orders and Meds:

Hypercalcemia

1. Admit to:

2. Diagnosis: Hypercalcemia

3. Condition:

4. Vital signs: q4h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; or tetany or any abnormal mental status.

5. Activity: Ambulate as often as possible, in chair at other times.

6. Nursing: Seizure precautions, weigh patient bid, I & O.

7. Diet: Hypercalcemia - restrict calcium to 400 mg/d, push PO fluids.

8. Special Medications:

-1-4 L of 0.9 % saline over 1-4 hours, then 150-200 cc/h IV until no longer hypotensive **THEN**

- Saline diuresis 0.9% saline infused at 100-200 cc/h to replace urine loss **AND**
- Furosemide (Lasix) 20-80 mg IV q4-12h. Maintain urine output of 200 mL/h; monitor I & O, monitor serum Na, K+, Mg.
- Calcitonin (Calcimar) 4-8 IV 1 kg IM q12h or SQ q6-12h (consider skin test dose prior to use).
- Discontinue medication associated with increased calcium:
Thiazide diuretics, lithium carbonate.

9. Extras: CXR, ECG, mammogram.

10. Labs: Total & ionized calcium, SMA 7 & 12, phosphate, Mg, alkaline phosphatase, prostate specific antigen. 24h urine calcium, potassium, phosphate. Parathyroid hormone, PTH-related peptide **11. Other Orders and Meds:**

Hypocalcemia

1. **Admit to:**
2. **Diagnosis:** Hypocalcemia
3. **Condition:**
4. **Vital signs:** q4h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; or any abnormal mental status.
5. **Activity:** Up ad lib
6. **Nursing:** I & O.
7. **Diet:** No added salt diet.
8. **Special Medications:**

Symptomatic Hypocalcemia:

-Calcium chloride, 10% (270 mg calcium/10 mL vial) give 5-10 mL slowly over 5-10 min or dilute in 50-100 mL of D5 & infuse over 20 min, repeat q1-2h if symptomatic, or q6-12h if asymptomatic. Correct hyperphosphatemia before hypocalcemia **OR**

-Calcium gluconate, 20 mL of 10% solution IV (2 vials)(90 mg elemental calcium/10 mL vial) infused over 10-15 min, followed by infusion of 60 ml of calcium gluconate in 500 cc of D5W (1 mg/ml) at 0.5-2.0 mg/kg/h - measure serum calcium q4-6h to maintain at 8-9 mg/dL (correct hypomagnesemia if present).

Chronic Hypocalcemia:

-Calcium carbonate (Oscal) 1 tab PO tid **OR**

-Calcium citrate (Citracal) 1 tab PO q8h or Extra strength tums 1-2 PO with meals.

-Vitamin D2 (Ergocalciferol) 1 tab PO qd.

-Calcitriol (Rocaltrol) 0.25 mcg PO qd, titrate up to 0.5-2.0 mcg qid.

-Docusate sodium (Colace) 250 mg PO bid prn constipation.

9. Extras: CXR, ECG.

10. Labs: SMA 7 & 12, phosphate, Mg. 24h urine calcium, potassium, phosphate, magnesium.

11. Other Orders and Meds:

Hyperkalemia

1. Admit to:

2. Diagnosis: Hyperkalemia

3. Condition:

4. Vital signs: Vitals, urine output q4h; Call physician if QRS complex >0.14 sec or BP $>160/90$, $<90/60$; P >120 , <50 ; R >25 , <10 ; T $>38.5^{\circ}\text{C}$.

5. Activity: Bed rest; up in chair as tolerated.

6. Nursing: I&O, daily weights. Chart QRS complex width q1h.

7. Diet: Regular, no salt substitutes.

8. IV Fluids: D5NS at 150 cc/h

9. Special Medications:

-Consider discontinuing NSAIDS, ACE inhibitors, beta-blockers, K-sparing diuretics.

-Calcium gluconate 10% sln 10-30 mL IV over 2-5 min; second dose may be given in 5 min. Contraindicated if digoxin toxicity is suspected. Keep 10 mL vial of calcium gluconate at bedside for emergent use.

-Sodium Bicarbonate 1-3 amps of 7.5% (44-132 mEq) IV over 5 min (give after calcium in separate IV), repeat in 10-15 min. Follow with infusion of 2-3 amps in 500 cc of D5W, titrated over 2-4 h.

- Insulin 10-20 U regular in 500 mL of 10% dextrose water IV over 1 hr or 10 units IV push with 1 amp 50% glucose (25 gm) over 5 min, repeat as needed.
- Kayexalate 15-50 gm in 100 mL of 20% sorbitol solution PO now & in 3-4h; up to 4-5 doses/d.
- Kayexalate retention enema 25-50 gm in 200 mL of 20% sorbitol; retain for 30-60 min.
- Furosemide 40-80 mg IV qd-bid.
- Consider emergent dialysis if cardiac complications or renal failure.

10. Extras: ECG

11. Labs: CBC, platelets, SMA7, Mg, calcium, SMA-12. UA, specific gravity, Na, K. pH, 24h urine K, Na, creatinine. 1, 25-hydroxy vitamin D, 25-hydroxy vitamin D

12. Other Orders and Meds:

Hypokalemia

1. Admit to:

2. Diagnosis: Hypokalemia

3. Condition:

4. Vital signs: Vitals, urine output q4h; Call physician if BP >160/90, <90/60; P>120, <50; R>25, <10; T >38.5°C.

5. Activity: Bed rest; up in chair as tolerated.

6. Nursing: I&O

7. Diet: Regular

8. Special Medications:

Acute Therapy:

- KCL 10-40 mEq in 100 cc saline infused IVPB over 2 hours; or add up to 10-80 mEq to 1 liter of IV fluid and infuse over 2 hours); may combine with 30-40 mEq PO q4h in addition to IV; total dose max is generally 100-200 mEq/d (3 mEq/kg/d).

Chronic Therapy:

- KCL elixir 1-3 tablespoon qd-tid PO after meals (20 mEq/Tbsp of 10% sln) **OR**
- Micro-K 10 mEq tabs 2-3 tabs PO tid after meals (40-100 mEq/d) **OR**
- KDur 20 mEq tabs 1 PO bid-tid.

Hypokalemia with metabolic acidosis:

- Potassium citrate 15-30 mL in juice qid PO after meals (1 mEq/mL).
- Potassium gluconate 15 mL in juice qid PO after meals (20 mEq/15 mL).

9. Extras: ECG, dietetics consult.

10. Labs: CBC, SMA7, SMA 12. UA, urine Na, K, Cl, pH, 24h urine for K, Na, creatinine.

11. Other Orders and Meds:

Hypermagnesemia

1. **Admit to:**

2. **Diagnosis:** Hypermagnesemia

3. **Condition:**

4. **Vital signs:** q6h; Call physician if QRS >0.14 sec.

5. **Activity:** Up ad lib

6. **Nursing:** I&O, daily weights. Hold all magnesium containing medications, including antacids if hypermagnesemia.

7. **Diet:** Regular

8. **Special Medications:**

-Saline diuresis 0.9% saline infused at 100-200 cc/h to replace urine loss **AND**

-Calcium chloride, 1-3 gms added to saline infusate (10% sln; 1 gm per 10 mL amp) to run at 1 gm/hr **AND**

-Furosemide 20-40 mg IV q4-6h. Monitor I&O q4-6h, serum Ca, Na, K, Mg bid.

-Magnesium of >9.0 requires stat hemodialysis (risk for respiratory failure).

-Pamidronate (Aredia) 60-90 mg in 1L NS infused over 4h.

Severe Hypercalcemia:

(714.0 mg/dl) Mithramycin (Plicamycin) 2.5 u/kg in 500 D5W IV over 4-6h x 1.

9. **Extras:** ECG

10. **Labs:** Magnesium, calcium, SMA 7 & 12. Urine Mg, electrolytes, 24h urine for Mg, creatinine.

11. **Other Orders and Meds:**

Hypomagnesemia

1. Admit to:

2. Diagnosis: Hypomagnesemia

3. Condition:

4. Vital signs: q6h

5. Activity: Up ad lib

6. Diet: Regular

7. Special Medications:

-Magnesium sulfate 1-6 gm in 500 mL D5W IV at 1 gm/hr.
Hold if no patellar reflex. (Estimation of Mg deficit = $0.2 \times \text{kg weight} \times \text{desired increase in Mg concentration}$; give deficit over 2-3d) **OR**

-Magnesium sulfate (severe hypomagnesemia <1.0) 1-2 gm (2-4 mL of 50% sln) IV over 15 min, **OR**

-Magnesium chloride (Slow-Mag) 65-130 mg (1-2 tabs) PO tid-qid (64 mg or 5.3 mEq/tab) **OR**

-Milk of magnesia 5 mL PO qd-qid.

8. Extras: ECG

9. Labs: Magnesium, calcium, SMA 7 & 12. Urine Mg, electrolytes, 24h urine Mg, creatinine.

10. Other Orders and Meds:

Hypernatremia

1. **Admit to:**
2. **Diagnosis:** Hypernatremia
3. **Condition:**
4. **Vital signs:** q2-4h; Call physician if BP >160/90, <70/50; P >140, <50; R>25, <10; T >38.5°C; or any change in neurologic status.
5. **Activity:** Bed rest; up in chair as tolerated.
6. **Nursing:** I&O, daily weights.
7. **Diet:** No added salt
8. **Special Medications:**

Hypernatremia with Hypovolemia:

If volume depleted, give 0.5-3 L NS IV at over 1-3 hours until not orthostatic, then give D5W (if hyperosmolar) or D5 1/2 NS (if not hyperosmolar) IV or PO to replace half of body water deficit over first 24h (attempt to correct sodium at 1 mEq/L/h), then remaining deficit over next 1-2 days.

$$\text{Body water deficit (L)} = \frac{0.6(\text{weight kg})([\text{Na serum}] - 140)}{140}$$

Hypernatremia with ECF Volume Excess:

- Salt poor albumin (25%) 50-100 mLs bid-tid x 48-72 h (if low oncotic pressure).
- Furosemide 40-80 mg IV or PO qd-bid.

Hypernatremia with Diabetes Insipidus:

- D5W to correct body water deficit (see above).
- Pitressin 5-10 U IM/IV q3-4h, keep urine specific gravity >1.010 **OR**

9. **Extras:** CXR, ECG.

10. Labs: SMA 7 & 12, serum osmolality, liver panel, ADH, plasma renin activity. UA, urine specific gravity. Urine osmolality Na, K; 24h urine Na, K, creatinine.

11. Other Orders and Meds:

Hyponatremia

1. Admit to:

2. Diagnosis: Hyponatremia

3. Condition:

4. Vital signs: q4h; Call physician if BP >160/90, <70/50; P >140, <50; R>25, <10; T >38.5°C; or any change in neurologic status.

5. Activity: Bed rest; up in chair as tolerated.

6. Nursing: Seizure precautions, I&O, daily weights.

7. Diet: Regular diet.

8. Special Medications:

Hyponatremia with Hypervolemia & Edema (low osmolality <280, UNa <10 mMol/L: nephrosis, CHF, cirrhosis):

-Water restrict to 0.5-1.0 L/d.

-Furosemide 40-80 mg IV or PO qd-bid.

Hyponatremia with Normal Volume Status (low osmolality <280, UNa <10 mMol: water intoxication; UNa >20: SIADH,

Reset osmostate, diuretic-induced:

-Water restrict to 0.5-1.5 L/d.

Hyponatremia with Hypovolemia (low osmolality <280) UNa <10 mMol/L: vomiting, diarrhea, 3rd space/respiratory/skin loss; UNa >20 mMol/L: diuretics, renal injury, RTA, adrenal insufficiency, partial obstruction, salt wasting:

If volume depleted, give 0.5-3 L of 0.9% saline over 1-3 hours until no longer hypotensive, then 0.9% saline at 65-150 cc/h (determine volume as below) or 100-500 cc 3 % hypertonic saline over 5h.

Severe Symptomatic Hyponatremia:

If volume depleted, give 0.5-3 L of 0.9% saline (154 mEq/L) over 1-3 hours until no longer orthostatic.

Determine vol of 3% hypertonic saline (513 mEq/L) to be infused:

$$\text{Na (mEq) deficit} = 0.6 \times (\text{wt kg}) \times (\text{desired [Na]} - \text{actual [Na]})$$

$$\frac{\text{Volume of sln (L)}}{\text{Number of hrs}} = \frac{\text{Sodium to be infused (mEq)}}{(\text{mEq/L in sln}) \times \text{Number of hrs}}$$

Correct half of sodium deficit IV slowly over 24 hours until serum sodium is 120 mEq/L; increase sodium by 12-20 mEq/L over 24h (1 mEq/L/h).

-Alternative Method: 3% saline 100-300 cc over 4-6h repeat as needed.

9. Extras: CXR, ECG, head/chest CT scan.

10. Labs: SMA 7 & 12, osmolality, triglyceride, liver panel. UA, urine specific gravity. Urine osmolality, Na, K.

11. Other Orders and Meds:

Hyperphosphatemia

1. **Admit to:**
2. **Diagnosis:** Hyperphosphatemia
3. **Condition:**
4. **Vital signs:** qid
5. **Activity:** Up ad lib
6. **Nursing:** I&O
7. **Diet:** Restrict phosphorus to 0.7-1 gm/d
8. **IV Fluids:** see below.
9. **Special Medications:**

Moderate Hyperphosphatemia:

- Restrict dietary phosphate to 0.6-0.9 gm/d.
- Aluminum hydroxide (Amphojel) 5-10 mL or 1-2 tablets PO before meals tid **OR**
- Aluminum carbonate (Basaljel) 5-10 mL or 1-2 tablets PO before meals tid.

Severe Hyperphosphatemia:

- Volume expansion with 0.9% saline 1-3 L over 1-3h.
- Acetazolamide (Diamox) 500 mg PO or IV q6h.
- Consider dialysis.

10. **Extras:** CXR PA & LAT, ECG.
 11. **Labs:** Phosphate, SMA 7 & 12, Mg, Cal, urine electrolytes, pH. UA, PTH.
 12. **Other Orders and Meds:**
-

Hypophosphatemia

1. **Admit to:**
2. **Diagnosis:** Hypophosphatemia
3. **Condition:**
4. **Vital signs:** qid
5. **Activity:** Up ad lib
6. **Nursing:** I&O.
7. **Diet:** Regular diet.
8. **IV Fluids:** see below.
9. **Special Medications:**

Mild Hypophosphatemia (1.0-2.5 mg/dl):

- Neutral phosphate (Nutra-Phos), 2 tab PO bid-tid (250 mg elemental phosphorus/tab) **OR**
- Phospho-Soda 5 mL (129 mg phosphorus)PO bid-tid.

Severe Hypophosphatemia (<1.0 mg/dl):

- Na or K phosphate 0.5 mMoles/kg in 250 mLs D5W or NS, IV infusion at 10 mMoles/hr.
- Add potassium phosphate to IV solution in place of KCL (max 40 mEq/L infused at 100-150 mL/h); max IV dose 7.5 mg phosphorus/kg/6-8h.

10. **Extras:** CXR PA & LAT, ECG.
 11. **Labs:** Phosphate, SMA 7 & 12, Mg, Cal, urine electrolytes, pH. UA.
 12. **Other Orders and Meds:**
-

Rheumatology

Systemic Lupus Erythematosus

1. **Admit to:**
2. **Diagnosis:** Systemic Lupus Erythematosus
3. **Condition:**
4. **Vital signs:** tid
5. **Allergies:**
6. **Activity:** Up as tolerated with bathroom privileges
7. **Nursing:** Dipstick urine.
8. **Diet:** No added salt, low psoralen diet.
9. **Special Medications:**
 - Aspirin 650-1300 mg PO qid (3.6-5.4 gm/d in divided doses)
OR
 - Ibuprofen (Motrin) 400 mg PO qid (max 2.4 g/d) **OR**
 - Indomethacin (Indocin) 25-50 mg tid-qid.
 - Hydroxychloroquine (Plaquenil) 200-600 mg/d PO
 - Prednisone 60-100 mg PO qd, may increase to 200-300 mg/d. Maintenance 10-20 mg PO qd or 20-40 mg PO qOD
OR
 - Methylprednisolone (pulse therapy) 500 mg IV over 30 min q12h for 3-5d, then prednisone 50 mg PO bid.
 - Betamethasone dipropionate (Diprolene) 0.05% ointment applied bid.
 - Ranitidine (Zantac) 150 mg PO bid.
10. **Extras:** CXR PA, LAT, ECG, intermediate strength PPD with controls before starting steroids; echocardiogram. Rheumatology consult.

11. Labs: CBC, platelets, SMA 7 & 12. INR/PTT. ESR, complement CH-50, C3, C4, C-reactive protein, LE prep, Coomb's test, VDRL, rheumatoid factor, ANA, DNA binding, lupus anticoagulant, anticardiolipin, antinuclear cytoplasmic; quantitative immunoglobulins; blood cultures x 2. UA, urine culture.

12. Other Orders and Meds:

Acute Gout Attack

1. Admit to:

2. Diagnosis: Acute gout attack

3. Condition:

4. Vital signs: qid

5. Activity: Bed rest with bedside commode

6. Nursing: Keep foot elevated with support sheets over foot; guaiac stools.

7. Diet: Low purine diet.

8. Special Medications:

-Indomethacin (Indocin) 25-50 mg PO q6h x 2d, then 50 mg tid for 2 days, then 25 mg PO tid **OR**

-Ketorolac (Toradol) 30-60 mg IM, then 15-30 mg IM q6h or 10 mg PO tid-qid. **OR**

-Ibuprofen (Motrin) 800 mg, then 400-800 mg PO q4-6h **OR**

-Naproxen sodium (Anaprox, Anaprox-DS) 550 mg PO bid.

-Colchicine 2 tablets (0.5 mg or 0.6 mg) followed by 1 tablet q1h until relief, max dose of 9.6 mg/24h. Then give maintenance colchicine 0.5-0.6 mg PO qd-bid **OR**

-Methylprednisolone (SoluMedrol) 125 mg IV x 1 dose **THEN**

-Prednisone 40-60 mg PO qd x 5 days, followed by tapering

OR

-Adrenocorticotrophic hormone (Acth) 40 units SQ q8-12h.

-Intra-articular injection with lidocaine/marcaine and triamcinolone.

Hypouricemic Therapy:

-Hypouricemic drugs are contraindicated during an acute attack unless patient was previously taking them.

-Allopurinol 300 mg PO qd, may increase by 100-300 mg q2weeks.

-Probenecid (Benemid), 250 mg bid. Increase the dosage to 500 mg bid after 1 week, then increase by 500-mg increments every 4 weeks while monitoring the serum uric acid level, which should be maintained below 6.5 mg/dL. Max dose 2 g/d; average maintenance dosage is 500 mg bid.

9. Symptomatic Medications:

-Ranitidine (Zantac) 150 mg PO bid.

-Meperidine (Demerol) 50-100 mg IM/IV q4-6h prn pain.

10. Labs: CBC, SMA 7, uric acid, ESR. UA with micro. Synovial fluid for light and polarizing micrography for crystals; C&S, Gram stain, glucose, protein, cell count, pH. X-ray views of joint. 24 hour urine for uric acid, creatinine.

11. Other Orders and Meds:

Drug Levels of Commonly Used Medications

Drug	Therapeutic Range
Amikacin	Peak 25-30; trough <10 mcg/mL
Amitriptyline	100-250 ng/mL
Carbamazepine	4-10 mcg/mL
Chloramphenicol	Peak 10-15; trough <5 mcg/mL
Desipramine	150-300 ng/mL
Digitoxin	10-30 ng/mL
Digoxin	0.8-2.0 ng/mL
Disopyramide	2-5 mcg/mL
Doxepin	75-200 ng/mL
Ethosuximide	40-100 mcg/mL
Flecainide	0.2-1.0 mcg/mL
Gentamicin	Peak 6.0-8.0; trough <2.0 mcg/mL
Imipramine	150-300 ng/mL
Lidocaine	2-5 mcg/mL
Lithium	0.5-1.4 mEq/L
Nortriptyline	50-150 ng/mL
Phenobarbital	10-30 mEq/mL
Phenytoin**	8-20 mcg/mL
Procainamide	4.0-8.0 mcg/mL
Quinidine	2.5-5.0 mcg/mL
Salicylate	15-25 mg/dL
Streptomycin	Peak 10-20; trough <5 mcg/mL
Theophylline	8-20 mcg/mL
Tocainide	4-10 mcg/mL
Valproic acid	50-100 mcg/mL
Vancomycin	Peak 30-40; trough <10 mcg/mL

* The therapeutic range of some drugs may vary depending on the reference lab used.

** Therapeutic range of phenytoin is 4-10 mcg/mL in presence of significant azotemia and/or hypoalbuminemia.

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